Vol. 892 Number 5

OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

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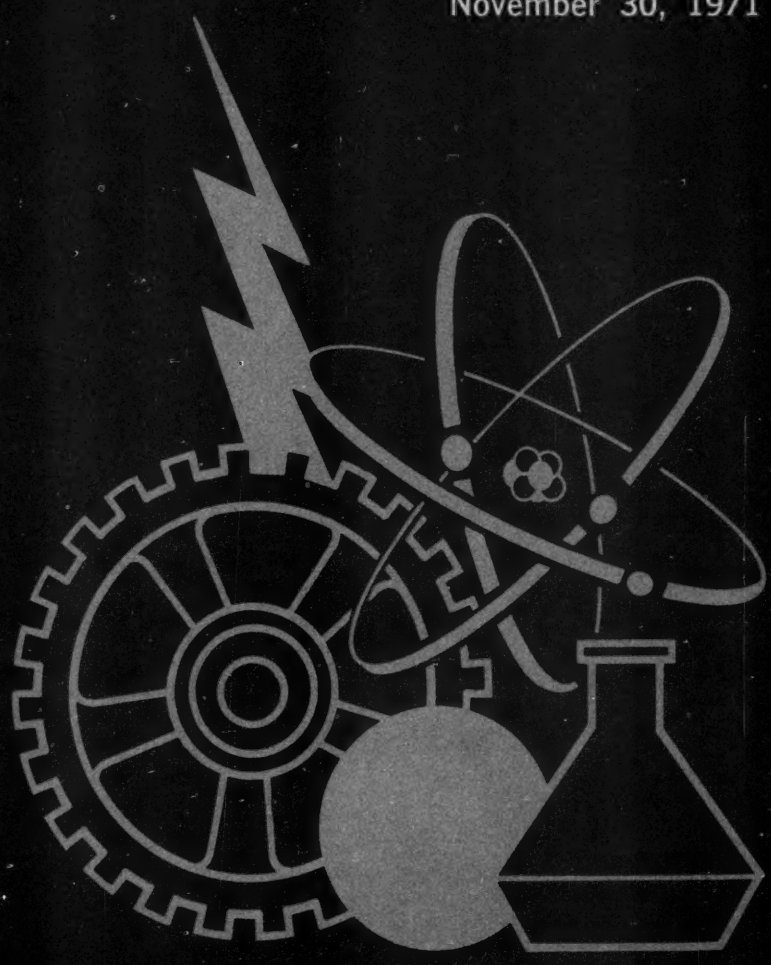
A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

November 30, 1971



U. S. DEPARTMENT OF COMMERCE
Patent Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

November 30, 1971 Volume 892 Number 5

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PATENT OFFICE NOTICES

Public Law 92—132

[92nd Congress, S. 1253]

October 5, 1971

AN ACT

85 Stat. 364

To amend section 6 of title 35, United States Code, "Patents," to authorize domestic and international studies and programs relating to patents and trademarks.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 6 of title 35, United States Code, is amended to read as follows:

Patents, trademarks. International programs, U.S. participation. 66 Stat. 793.

"§ 6. *Duties of Commissioner*

"(a) The Commissioner, under the direction of the Secretary of Commerce, shall superintend or perform all duties required by law respecting the granting and issuing of patents and the registration of trademarks; shall have the authority to carry on studies and programs regarding domestic and international patent and trademark law; and shall have charge of property belonging to the Patent Office. He may, subject to the approval of the Secretary of Commerce, establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent Office.

"(b) The Commissioner, under the direction of the Secretary of Commerce, may, in coordination with the Department of State, carry on programs and studies cooperatively with foreign patent offices and international intergovernmental organizations, or may authorize such programs and studies to be carried on, in connection with the performance of duties stated in subsection (a) of this section.

Transfer of funds.

"(c) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, transfer funds appropriated to the Patent Office, not to exceed $100,000 in any year, to the Department of State for the purpose of making special payments to international intergovernmental organizations for studies and programs for advancing international cooperation concerning patents, trademarks, and related matters. These special payments may be in addition to any other payments or contributions to the international organization and shall not be subject to any limitations imposed by law on the amounts of such other payments or contributions by the Government of the United States."

Approved October 5, 1971.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 92-475 (Comm. on the Judiciary).
SENATE REPORT No. 92-71 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 117 (1971):
Apr. 22, considered and passed Senate.
Sept. 28, considered and passed House.

Registration to Practice

The following list contains the names of former examiners who are applying for registration to practice before the Patent Office on the basis of 4 years or more service in the Examining Corps.

Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before Dec. 31, 1971.

Bell, Ronald S., 4111 Medford Drive, Annandale, Va., 22003.
Bettis, Bernard, 17 Brook Hill Lane, #C, Rochester, N.Y., 14625.
Crosson, Kenneth L., 6146 Springhill Terrace, #203, Greenbelt, Md., 20770.

ROBERT GOTTSCHALK,
Chairman, Committee on Enrollment.

Nov. 5, 1971.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,544,246, G. H. Butterfield, CORNEAL CONTACT LENS, **filed** Feb. 20, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c413, *George H. Butterfield, Sr.* v. *Invisible Lens Corporation.* Cause dismissed without prejudice, Sept. 18, 1970.

2,625,683, Roth and Lombard, CRASH HELMET, **filed** Aug. 30, 1967, D.C., C.D. Calif. (Los Angeles), Doc. 67-1287-F, *Bell-Toptex, Inc.* v. *James E. Charlsen and Judy Charlsen et al.* Action dismissed by the court for lack of prosecution, June 21, 1971.

2,629,134, R. P. Molitor, METHOD OF MANUFACTURING ARTICLES FROM VINYL RESINS, **filed** Nov. 3, 1960, D.C., S.D.N.Y., Doc. 60-C-4327, *Barr Rubber Products Company* v. *Sun Rubber Company and Wonder Products Inc.* Consent judgment, defendant owner of patent and infringed by Barr. Action dismissed with prejudice as to the parties Barr and Sun, July 6, 1971 (supplemental notice).

2,633,251, J. K. Bruce, PALLETIZER, **filed** Mar. 26, 1970, D.C., E.D. Mo. (St. Louis), Doc. 70C146(3), *Production Aids Incorporated* v. *Contract Beverage Packers, Inc.* Stipulation and order dismissing cause with prejudice, June 24, 1971.

2,637,893, G. Shaw, ARTIFICIAL FILAMENT, **filed** Feb. 14, 1967, D.C.N.J. (Newark), Doc. C-165-67, *Gilbert Shaw and Polymers, Inc.* v. *Consolidated Novelty Company.* Stipulation of dismissal, June 14, 1971.

2,652,402. (See 2,742,462.)

2,658,742, Suter and Ruff, CATALYTIC FUME INCINERATION; **2,720,494,** same, PROCESS OF PREPARING CATALYTIC ELEMENTS, **filed** July 9, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1663, *Universal Oil Products Co.* v. *Catalytic Products Intl. et al.*

2,667,312, Denison and Johnson, FISHING REEL; **2,828,088,** same, SPINNING REEL, **filed** Oct. 19, 1967, D.C., N.D. Ohio (Cleveland), Doc. C67–759, *Denison-Johnson, Inc.* v. *True Temper Corporation.* Consent judgment, patents valid and defendant has infringed, June 22, 1971.

2,694,692, Amos, McCurdy and McIntire, METHOD OF MAKING LINEAR INTERPOLYMERS OF MONOVINYL AROMATIC COMPOUNDS AND A NATURAL OR SYNTHETIC RUBBER, **filed** June 29, 1970, D.C. Del. (Wilmington), Doc. 3921, *The Dow Chemical Company* v. *Monsanto Company.* Stipulation of settlement with prejudice, June 21, 1971.

2,705,492, M. H. Chandler, TEETH PROTECTOR, **filed** Nov. 16, 1964, D.C., S.D. Tex. (Houston), Doc. 64–H–591, *Dr. M. H. Chandler and Sidney P. Chandler* v. *Stern Dental Laboratory Co., Inc. et al.* Final judgment, case dismissed, July 8, 1971.

2,706,621, T. J. Laird, DISPERSION MILLS, **filed** July 2, 1971, D.C., W.D.N.Y. (Buffalo), Doc. C–1971–312, *Kinetic Dispersion Corp.* v. *Gaze J. Sabo and Dispersion Equipment Corp.*

2,720,494. (See 2,658,742.)

2,722,001, Schafroth, and Mott, RETRACTABLE ANVIL STAPLING MACHINE; **2,778,022,** W. Schafroth, STAPLE MAGAZINE AND FEED MEANS FOR STAPLING MACHINES; **2,816,288,** Heilman, Kaye and Wasynczuk, TWO-PIECE REMOVABLE ANVIL FOR STAPLING MACHINES, **filed** July 6, 1971, D.C., N.D. Calif. (San Francisco), Doc. C-71-1296–ACW, *International Staple & Machine Co.* v. *National Packaging Corp. and Showa Boeki Co., Ltd.*

2,728,779, A. Pohland, ESTERS OF SUBSTITUTED AMINOBUTANES, **filed** Oct. 27, 1969, D.C., S.D. Fla. (Miami), Doc. 69–1241–C–JLK, *Eli Lilly and Company, Inc.* v. *Generix Drug Sales, Inc.* Consent judgment, patent valid and defendants are permanently enjoined, July 30, 1971.

2,734,226, W. H. Willert, INJECTION MOLDING APPARATUS, **filed** Nov. 23, 1970, D.C. Conn. (New Haven), Doc. 14149, *Egan Machinery Company and William H. Willert* v. *Polymer Machinery Corp.* Stipulation for dismissal, May 19, 1971.

2,736,880, J. W. Forrester, MULTI-COORDINATE DIGITAL INFORMATION STORAGE DEVICE, **filed** Apr. 17, 1970, D.C. Mass. (Boston), Doc. 70–523–F, *Massachusetts Institute of Technology* v. *Fabri-Tex Incorporated.* Order dismissing action with prejudice and license is entered into and accepted. Upon any breach of or default under this license by licensee, MIT may terminate this license by 30 days' written notice by registered mail to licensee, June 22, 1971.

2,740,027, Budd, Stackhouse and Slough, RADIO AND TELEVISION RECEIVER COMPONENT ADAPTED ESPECIALLY FOR USE WITH PRINTED WIRING; **2,781,436,** W. A. Barden, VARIABLE RESISTOR WITH MEANS FOR PREVENTING SHAFT RATTLE; **2,836,691,** Di Girolamo and Arisman, COMBINATION VARIABLE RESISTOR AND SWITCH; **3,304,199,** Faber, Francis, Holmes and Boykin, ELECTRICAL RESISTANCE ELEMENT; **3,412,059,** Stickelmeyer and Safranski, AQUEOUS DISPERSION COATING CONTAINING WAX AND CERTAIN ACRYLATE TYPE POLYMERS; **3,550,059,** Barden, Van Bethuysen and Zdanys, VARIABLE RESISTANCE CONTROL, **filed** July 6, 1971, D.C., S.D.N.Y., Doc. 71–C–30002, *CTS Corp.* v. *ALPS Electric Co. Ltd.*

2,742,462, G. Gever, NEW N-(5-NITRO-2-FURFURYLIDENE) - 3 - AMINO - 2 - OXAZOLIDONES; **2,652,402,** same, SERIES OF NEW 3–AMINO-2-OXAZOLIDONES AND THE PREPARATION THEREOF; **2,943,019,** M. P. Natt, ANTICOCCIDIAL COMPOSITION AND METHOD OF COMBATTING COCCIDIOSIS, **filed** Oct. 27, 1969, D.C., E.D. La. (Baton Rouge), Doc. 69–223, *Morton Norwich Products, Inc. et al.* v. *Matt C. Hunter, doing business as Chemage Company.* Consent judgment, plaintiff sole owner of patents and injunction restraining defendant permanently, June 11, 1971.

2,769,804. (See 3,061,788.)

2,769,905. (See 3,061,788.)

2,778,022. (See 2,722,001.)

2,781,436. (See 2,740,027.)

2,802,257, C. N. Holtzapple, METHOD OF FORMING AN ELECTRICAL CONNECTION; **3,009,503,** same, IMPROVED TOOL FOR MAKING ELECTRICAL CONNECTIONS; **3,553,814,** F. W. Rider, TERMINAL APPLICATOR FOR TERMINALS IN STRIP FORM, **filed** June 2, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1342, *AMP Incorporated* v. *Brundy of Midwest, Inc.* **Same, filed** July 8, 1971, D.C. Conn. (Bridgeport), Doc. B–322–C, *Brundy Corporation* v. *AMP Incorporated.*

2,804,554, C. Ippolito, EMERGENCY STAND-BY ELECTRIC SERVICE APPARATUS; **2,864,005,** same, STANDBY ELECTRICAL SYSTEM, **filed** Apr. 7, 1961, D.C. Conn. (New Haven), Doc. 8757–C, *Dual-Lite Company* v. *The Mallard Manufacturing Company.* Stipulation dismissing all claims and withdrawing action, May 7, 1971.

2,804,571. (See 3,061,788.)

2,816,288. (See 2,722,001.)

2,823,828, M. A. Frater, NESTING AND STACKING CONTAINER, **filed** May 2, 1969, DC., E.D. Mich. (Detroit), Doc. 32744, *Milton A. Frater and G. B. Lewis Company* v. *Pickney Molded Plastics, Inc.* Consent judgment for permanent injunction, Aug. 12, 1971.

2,826,694. (See 3,061,788.)

2,828,088. (See 2,667,312.)

2,836,691. (See 2,740,027.)

2,853,609. (See 3,061,788.)

2,864,005. (See 2,804,554.)

2,883,619. (See 3,061,788.)

2,930,986. (See 3,061,788.)

2,943,019. (See 2,742,462.)

3,009,503. (See 2,802,257.)

3,061,788, J. R. Kobbe, MULTIVIBRATOR HOLD-OFF CIRCUIT; **2,769,905,** R. L. Ropiequet, SWEEP CIRCUIT; **2,769,904,** GATED SWEEP GENERATOR; **2,853,609,** same, MULTIVIBRATOR HOLD-OFF CIRCUIT; **2,883,619,** Kobbe and Polits, ELECTRICAL PROBE; **2,930,986,** same, DISTRIBUTED AMPLIFIER; **2,826,694,** R. L. Ropiequet, FREE-RUNNING MULTIVIBRATOR; **2,804,571,** J. R. Kobbe, UNBLANKING CIRCUIT FOR CATHODE RAY TUBES, **filed** Mar. 2, 1961, U.S. Ct. of Cl., Doc. 79–61, *Tektronix, Inc.* v. *The United States, defendant; The Hickok Electric Instrument Co., Jetronic Industries, Inc., and Lavoie Laboratories, Inc., third-party defendants.* Opinion, patents valid and infringed, decided June 11, 1971.

3,304,199. (See 2,740,027.)

3,322,289, Wendell and Peterson, LOADING, STORAGE AND DISPENSING APPARATUS FOR USE WITH A BITUMINOUS MIXING PLANT, **filed** June 7, 1971, D.C., S.D.N.Y., Doc. 71–N–C–2527, *Add-A-Bin Co.* v. *Michael Dydzyk.* **Same, filed** June 8, 1971, D.C. Md. (Baltimore), Doc. 71–612–T, *Add-A-BIN Co.* v. *The Bituminous Construction Co.*

3,377,716, A. R. Schmoyer, METHOD OF AND APPARATUS FOR TEACHING THE OPERATION OF A KEYBOARD CONTROLLED MACHINE OR INSTRUMENT; **3,482,480,** T. W. Decker, TEACHING APPARATUS FOR KEYBOARD INSTRUMENT, **filed** June 18, 1971, D.C., N.D. Tex. (Dallas), Doc. CA–3–4896–A, *IMC International, Inc.* v. *Arthur R. Schmoyer.*

3,412,059. (See 2,740,027.)

3,482,480. (See 3,377,716.)

3,550,059. (See 2,740,027.)

3,553,814. (See 2,802,257.)

D. 212,372, Trimble and Rottman, GOAL POST, **filed** Mar. 5, 1971, D.C., N.D. Tex. (Wichita Falls), Doc. CA7–627, *Triman Tele-Goal, Inc.* v. *Wichita Falls Independent School District. Design patent valid.* Defendant is satisfied by virtue of a license granted by plaintiff, apr. 14, 1971.

Erratum

In the OFFICIAL GAZETTE of Aug. 17, 1971, vol. 889, page 712, in paragraph 21 beginning with 3,229,413, last line should read *Stipulation and order of dismissal, Mar. 26, 1971.*

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office either on the basis of 4 years or more service in the Examining Corps or under Rule 341(e) of the "Rules of Practice of the United States Patent Office in Patent Cases."

Information tending to affect the eligibility of said applicants on moral or ethical grounds should be furnished the Commissioner of Patents on or before November 29, 1971.

Birch, Anthony L., 5420 Bradley Blvd., Bethesda, Md. 20014
Bitner, Ronald G., P.O. Box 2223, Sta. D, Ottawa, Ontario, Canada
Deluca, Alfred A., 12 Harrogate Place, Ottawa, Ontario, Canada
Ditlow, Clarence M. III, 661 South Carolina Ave. SE., Washington, D.C. 20003
Fassi, Aldo, Via Sassetti, 12, Milan, Italy
Incollingo, Italo, Via Pergine, 12, Milan, Italy
Leman, John F., P.O. Box 8305, Ottawa, Ontario, Canada
Lemon, Francis W., 175 Bronson Ave., Apt. 409, Ottawa, Ontario, Canada
McKenzie, R. Dale, 190 Howland Ave., Toronto, Ontario, Canada
Pole, Frank L., 21 Parkside Crescent, Ottawa, Ontario, Canada
Strazricky, Ivan, 15 Rockway Crescent, Apt. 16, Ottawa, Ontario, Canada
Turpin, Frank, 2125 Bel-Air Drive, Ottawa, Ontario, Canada
Wood, Brian J., 833 Pigott Road, Richmond, British Columbia, Canada

ROBERT GOTTSCHALK,
Oct. 13, 1971. *Chairman, Committee on Enrollment.*

Certificates of Correction for the week of Nov. 30, 1971

Re. 27,085	3,558,599	3,573,859	3,581,795
3,285,906	3,560,581	3,574,159	3,582,033
3,486,619	3,560,937	3,574,215	3,583,457
3,490,991	3,563,945	3,576,185	3,584,579
3,496,163	3,565,931	3,576,514	3,584,862
3,496,253	3,566,138	3,577,052	3,585,084
3,499,917	3,566,238	3,577,232	3,585,213
3,506,504	3,566,365	3,577,418	3,585,405
3,510,492	3,566,590	3,577,748	3,586,221
3,514,284	3,566,782	3,577,862	3,586,222
3,521,824	3,566,884	3,578,107	3,586,727
3,528,836	3,567,065	3,578,475	3,586,832
3,534,254	3,567,480	3,578,907	3,586,931
3,534,342	3,567,621	3,578,958	3,587,677
3,539,344	3,567,631	3,579,154	3,588,466
3,541,406	3,567,991	3,579,328	3,588,592
3,547,867	3,568,801	3,579,379	3,588,641
3,548,210	3,570,094	3,580,092	3,588,994
3,549,044	3,571,782	3,580,107	3,589,190
3,553,281	3,571,838	3,580,974	3,589,483
3,553,414	3,571,981	3,581,187	3,590,239
3,555,336	3,573,302	3,581,208	3,590,903
3,557,320	3,573,857	3,581,756	3,597,479

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 16, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-09-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-24-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	9-11-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	5-11-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-01-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	3-16-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-21-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-23-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	9-28-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	10-12-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	9-02-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	8-03-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-07-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	11-20-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	8-19-70

Expiration of patents: The patents within the range of numbers indicated below expire during December 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 600, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,695,998 to 2,698,433, inclusive
Plant Patents..... Numbers 1,328 to 1,338, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED NOVEMBER 30, 1971

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T892,018
PROCESS FOR PREPARING HIGH PURITY DIHYDROISOPHORONE

William E. Wellman, 24 Cambridge Road, Edison, N.J. 08817; Paul E. Burton, 761 Austin St., Westfield, N.J. 07090; and William D. Diana, 1001 Shadow Oak Lane, Somerville, N.J. 08876

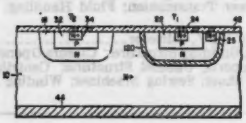
Filed Sept. 10, 1968, Ser. No. 758,839
Int. Cl. C07c *45/00, 49/30*
U.S. Cl. 260—586 R
1 Sheet Drawing. 28 Pages Specification

In the hydrogenation of isophorone to dihydroisophorone, maintaining the reaction zone at elevated pressures under mild temperature conditions significantly improves the selectivity to dihydroisophorone at high conversion levels. Isophorone is contacted with hydrogen in the presence of a hydrogenation catalyst in a hydrogenation zone wherein the hydrogen pressure in said zone is maintained between about 10 to 200 p.s.i.g. and the temperature in said zone ranges from about 25° to less than 175° C. The hydrogenation reaction product recovered from the reaction zone is distilled to obtain substantially pure dihydroisophorone. In a preferred embodiment, the hydrogenation reaction product is distilled in a first zone to separate the distillate comprising dihydroisophorone and β-isophorone from the residue comprising α-isophorone. The distillate withdrawn from the first zone is then passed to a second zone wherein said distillate is heated at a temperature sufficient to substantially isomerize β-isophorone to α-isophorone without causing pyrolysis of the remainder of said distillate. The effluent from said second zone is then passed to a third zone to separate the distillate comprising dihydroisophorone from the residue comprising α-isophorone.

T892,019
SEMICONDUCTOR INTEGRATED CIRCUIT WITH ISOLATED ELEMENTS AND POWER TRANSISTOR UTILIZING SUBSTRATE FOR LOW COLLECTOR RESISTANCE

Edgar A. Sack, 48 St. Andrews St., Severna Park, Md. 21146

Filed Jan. 27, 1969, Ser. No. 794,046
Int. Cl. H01l *19/00*
U.S. Cl. 317—235
1 Sheet Drawing. 8 Pages Specification



A substrate, preferably of low resistivity, can serve as a collector contact region of a power transistor as well as a support for other functional elements of an integrated circuit. An epitaxial layer on the surface of the substrate, of the same conductivity type but higher resistivity, contains other regions of functional elements. Isolation means such as PN junction forming regions or dielectric material, underlies and encloses those portions of the epitaxial layer to be isolated. Minimal collector resistance and increased power handling capability can be obtained with the power transistor structure without sacrificing isolation or complicating fabrication.

T892,020
METHOD FOR VARYING THE CONTRAST OF DUPLICATE RADIOGRAPHS

Leland Erickson, Kodak Park Works, Rochester, N.Y. 14650

Filed Feb. 2, 1970, Ser. No. 8,027
Int. Cl. G03b *41/16*
U.S. Cl. 355—132
No Drawing. 9 Pages Specification

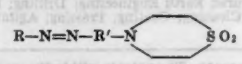
A method of adjusting the contrast of copies of radiographs to permit successful rendition of the original radiograph is described. According to the present method there is provided exposure of a direct-positive photosensitive element having at least two photosensitive layers separated by a filter layer to a light source selected for its wavelength distribution. The contrast control which characterizes the method of the present invention is readily achieved by utilizing the above-described photographic element and exposing the element through a radiographic master with a light source selected for its wavelength emission. By properly selecting the characteristics of said photographic element and by selecting an appropriate spectrum of exposing light, it is possible to produce a duplicating film having a gamma of unity and maximum density greater than 3.0 which can render a faithful copy of a radiograph containing densities greater than 3.0.

T892,021
MONOAZO COMPOUNDS CONTAINING A THIOMORPHOLINEDIOXIDE GROUP AND MATERIALS DYED THEREWITH

Max A. Weaver and David J. Wallace, both of P.O. Box 511, Kingsport, Tenn. 37662

Continuation of application Ser. No. 721,094, Apr. 12, 1968. This application Mar. 5, 1970, Ser. No. 17,010
Int. Cl. C09b *29/36, 62/82;* D06p *1/04*
U.S. Cl. 8—41 C
No Drawing. 22 Pages Specification

Monoazo dyes of the formula

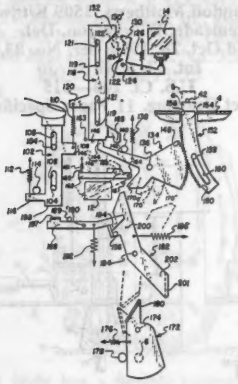


wherein R is a 2-thiazolyl, a 2-benzothiazolyl, a 1,3,4-thiadiazol-2-yl, a 1,2,4-thiadiazol-2-yl, a 3-pyrazolyl or a 2-thienyl radical and R' is a p-phenylene radical which dyes are useful in dyeing hydrophobic textile materials to give yellow to blue dyeings having good light, washing, gas and sublimation fastness properties.

T892,022
MECHANISM FOR EFFECTING SYNCHRONOUS PERCUSSIVE FLASH EXPOSURES

William T. Hochreiter, 23 Chestnut Drive, Rochester, N.Y. 14624

Filed Mar. 27, 1970, Ser. No. 23,129
Int. Cl. G03b *15/04*
U.S. Cl. 95—11.5
6 Sheets Drawing. 28 Pages Specification



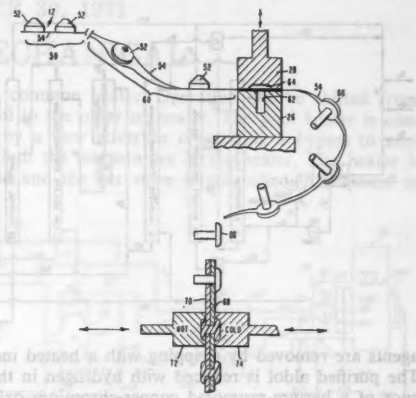
A mechanism for effecting synchronous flash exposures in a camera adapted to receive a percussive flash device of the type incorporating a pre-energized impacting member. According to several embodiments, a high energy lever is released from a set condition in response to the displacement of a release member, and operates to actuate the camera shutter and release the impacting member of the flash device, thereby effecting a synchronous flash exposure. The condition of the impacting member at the camera firing site is determined by a gear driven actuating probe, which additionally serves to fire the flash device. A visual signal indicates that the impacting member is not in the set condition. According to other embodiments, displacement of a release member by a prescribed amount in turn moves a latch which releases high energy levers for effecting synchronous flash exposures.

T892,023
PROCESS FOR NONMELT FORMING WEBS OF THERMOPLASTIC RESIN AND ARTICLE FORMED THEREBY

Kenneth W. Filbert, 6 Hilton, Hilton, and Peter J. Wayne, 731 Halstead Road, Sharpley, both of Wilmington, Del. 19803

Filed Apr. 10, 1970, Ser. No. 27,240
Int. Cl. B29f *3/00;* F16b *19/04*
U.S. Cl. 161—116
1 Sheet Drawing. 6 Pages Specification

Thermoplastic resin is formed into a continuous patterned web which remains intact while passing through one or more stations where work, including nonmelt forming, is done on the web. For example, the web as formed comprises a strip of film having spaced preforms integrally molded to one surface thereof. At the first station, the web is longitudinally nonmelt drawn which increases the distance between the preforms but does not change their configuration because of their greater thickness. At the next station, the preforms are nonmelt formed into a rivet, and the film between rivets is trimmed in width if desired. At the final station, the web is broken down into discrete rivets which are nonmelt formed in fastening disposition through apertured sheet members. If the film of the web is retained between one or more pairs of rivets, the previously described nonmelt drawing of the web strengthens the film so that it can serve as a high strength tying element between rivets. Instead of



rivets, the preforms can be utilized as-molded or as thereafter nonmelt formed or drawn to form other useful articles together with or apart from the as-molded or thereafter nonmelt drawn film portion of the web.

T892,024
PROCESS FOR THE ISOMERIZATION OF DIMETHYL CIS-1,4-CYCLOHEXANEDICARBOXYLATE TO THE TRANS-ISOMER

John G. Thweatt, Rte. 11 37663, and Wayne V. McConnell, 1509 Ardmore Place 37664, both of Kingsport, Tenn.

Filed May 13, 1970, Ser. No. 36,997
Int. Cl. C07c *67/00, 69/74*
U.S. Cl. 260—468 R
No Drawing. 6 Pages Specification

A process for isomerizing a mixture of cis- and trans-dimethyl 1,4-cyclohexanedicarboxylate containing a high content of the cis-isomer to mixtures containing much larger amounts of the trans-isomer by heating the original mixture in the presence of an acidic catalyst which is insoluble in the mixture of cis- and trans-isomers. The insoluble catalyst can be removed from the reaction mixture by filtration or decantation, permitting either the substantially pure trans-isomer or at least a mixture of cis- and trans-isomers uncontaminated with the catalyst to be recovered. The ratio of catalyst employed with respect to the cis- and trans-mixture may range from about 0.005 to 1.0. When operating at atmospheric pressure heating may be at a temperature of 200–265° C. Carrying out the reaction at super-atmospheric pressures permits the use of higher temperatures.

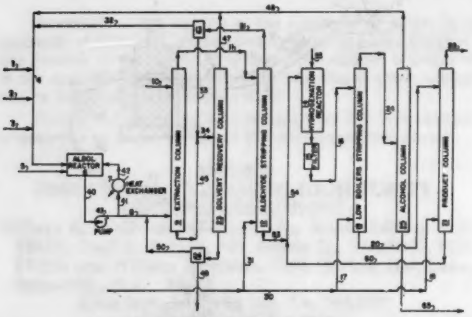
T892,025
PROCESS FOR PREPARATION OF 2,2-DIALKYLPROPANE-1,3-DIOL

Hugh J. Hagemeyer, Jr., and Sam H. Johnson, Jr., both of Box 2068, Longview, Tex. 75601

Continuation of application Ser. No. 732,165, May 27, 1968. This application Aug. 24, 1970, Ser. No. 66,638
Int. Cl. C07c *31/02, 47/02*
U.S. Cl. 260—635 P
1 Sheet Drawing. 15 Pages Specification

A process for preparing 2,2-dialkylpropane-1,3-diols by contacting an alcoholic solution of an aldehyde having a single alpha-hydrogen atom and from 5 to 23 carbon atoms with formaldehyde in the presence of a caustic aldol condensation catalyst. The aldehyde is present in

a ratio of from 1 to 3 moles of aldehyde per mole of formaldehyde. The reaction is conducted at a temperature of from 0° C. to 40° C. to form an aldol. The alcohol, salts and catalyst residue are removed by water washing. Other dissolved impurities and unreacted re-



agents are removed by stripping with a heated inert gas. The purified aldol is reduced with hydrogen in the presence of a barium-promoted copper-chromium oxide catalyst and subsequently stripped of reduction by-products with an inert gas to yield the essentially pure diol.

T892,026
PROCESS FOR IMPROVING RELEASE PROPERTIES AND LUBRICITY OF PERFLUOROOLEFIN POLYMER FILMS

Michael J. Bagnall, Grand Blanc, Mich., and Michael W. Miller, King of Prussia, and Le Verne K. Osdal and Edward J. Welch, Springfield, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

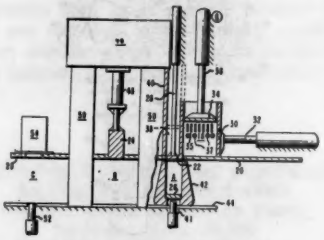
Filed Oct. 16, 1970, Ser. No. 81,627
Int. Cl. B44d *1/38, 1/46, 1/48*
U.S. Cl. 117—64
No Drawing. 15 Pages Specification

Process for improving the lubricity and release properties of the surface of films of polytetrafluoroethylene, tetrafluoroethylene/hexafluoropropylene copolymers, or blends of polytetrafluoroethylene or tetrafluoroethylene/hexafluoropropylene with other film-forming material which comprises subjecting the surfaces of such films to sufficient thermal energy or mechanical energy to coalesce at least some of the polytetrafluoroethylene or tetrafluoroethylene/hexafluoropropylene at the surface of the film.

T892,027
BALING APPARATUS

Bernard Landoff Matthews, 2509 Kittiwake Drive, Brookemeade, Wilmington, Del. 19805

Filed Oct. 26, 1970, Ser. No. 83,726
Int. Cl. B30b *15/30*
U.S. Cl. 100—215
1 Sheet Drawing. 11 Pages Specification



A baling apparatus with facilities for successive, bidirectional stages of compression. In the first stage, staple fibers are accumulated and tamped into a batt of low density. One wall of the accumulation chamber is a platen which transfers the tamped batt to an intermediate chamber, further compresses it in a second stage and then functions as a wall of the intermediate chamber. Next, the batt is ejected into a mold which travels on tracks into position for the third stage beneath a high compression platen. The platens move downwardly in the first and third stages and laterally in the second stage.

PATENTS

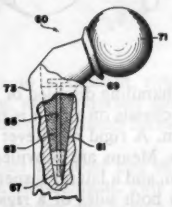
GRANTED NOVEMBER 30, 1971

GENERAL AND MECHANICAL

3,623,163
BACKSTOP FOR A BALL GLOVE
Roland N. Latina, Belleville, Ill., assignor to A-T-O Inc., Willoughby, Ohio
Filed Jan. 16, 1970, Ser. No. 3,297
Int. Cl. A41d *13/10*
U.S. Cl. 2—19 **12 Claims**

A ball glove body has a flexible backstop attached to and extending between its index finger section and its thumb section. The backstop possesses a conical or concave shape and forms a continuation of the ball-receiving side of the glove body so as to create a deep ball-receiving pocket within the glove.

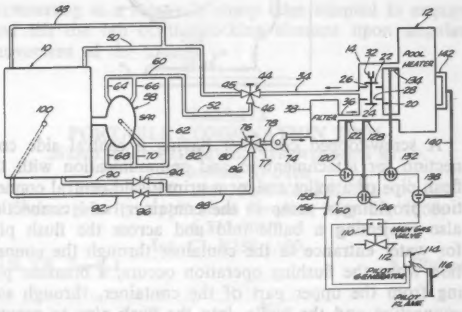
3,623,164
PROSTHETIC DEVICE
Jack C. Bokros, San Diego, Calif., assignor to Gulf Oil Corporation
Filed Oct. 6, 1969, Ser. No. 863,959
Int. Cl. A61f *1/00*
U.S. Cl. 3—1 **11 Claims**



A prosthetic device designed for implantation in broken bones. An inner rod member of high-strength metallic alloy having a high modulus of elasticity is disposed within an outer sleeve member of carbon having a low modulus of elasticity. The carbon sleeve is bonded or friction-fitted to the inner rod, or it may be prestressed between an enlarged head at one end of the rod and a nut. The composite unit has a modulus of elasticity closely approximating that of living bone which allows the unit to remain securely implanted and not be displaced through toggling.

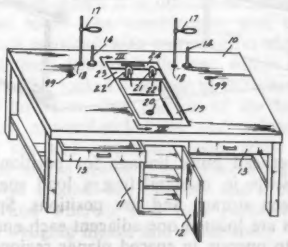
3,623,165
MULTIPLE POOL SYSTEM WITH COMMON HEATER
Alfred Whittell, Jr., Los Angeles, Calif., assignor to Raypak Company, Inc., El Monte, Calif.
Filed Feb. 9, 1970, Ser. No. 9,650
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.15 **7 Claims**

A multiple pool system comprising a main pool and a small therapeutic pool or spa, both pools being heated from a common heater. Operation can be shifted from one pool to the other manually. The pool heater is controlled by a flow governor controlling a bypass to normally limit the temperature in the heater. The heater is gas fired and the gas valve is controlled in response to



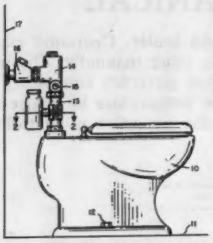
temperature of water returning to the heater. When operation is shifted to the therapeutic pool the control point of the control of the gas valve is raised which causes the flow governor to cut-off the bypass across the pool heater resulting in the water in the spa or therapeutic pool being maintained at a higher temperature.

3,623,166
SEPARABLE CONNECTION OF PORTABLE UNITS WITH FLUID DUCT AND ELECTRICAL MEANS
Thomas A. Wilkinson, Patterson Drive, R^te. 1, Morris, Ill. 60450
Filed Nov. 13, 1969, Ser. No. 876,338
Int. Cl. E03c *1/00*
U.S. Cl. 4—191 **20 Claims**



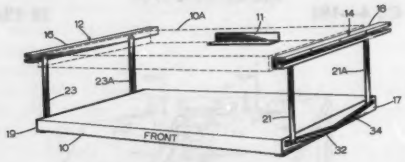
For effecting utility connections with a portable unit, it is adapted to carry connecting structure which is movable into and out of connecting relation to complementary connecting structure at a fixed location. More particularly fluid duct means and electrical means of the portable unit are adapted to be operatively connected with fluid duct means and electrical means at a fixed location by a device comprising separable complementary mounting structures respectively on the unit and at a fixed location, such structures having respective connecting means and complementary mating separable coupling elements for coupling the connecting means together, with releasable means for locking the structures together with the coupling elements mated.

3,623,167
SANITARY DISPENSERS
Marius H. Syrenne and Alphonse R. Syrenne, both of 1604 9th Ave. N., Saskatoon, Saskatchewan, Canada
Filed Feb. 16, 1970, Ser. No. 11,752
Int. Cl. E03d *9/03*
U.S. Cl. 4—225 **3 Claims**



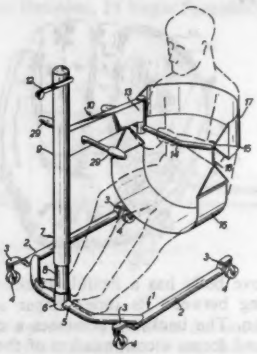
A screw-topped container having a central side connection for attachment to and communication with the flush pipe of a toilet and/or a urinal; said central connection providing a sump in the container; said connection also projecting a baffle into and across the flush pipe for water entrance to the container through the connection when the flushing operation occurs; a breather piping from the upper part of the container, through said connection and the baffle, into the flush pipe to prevent an air lock and a vacuum in the container; a bag containing bactericide, water-immersed in said sump for protection from air deterioration and to enrich the water, for delivery to the flush pipe in the draining of the container after said flushing.

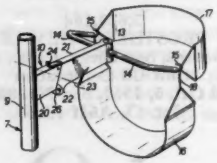
3,623,168
OVERHEAD BUNK LINKAGE
Kenneth E. Rouch, Rte. 3, Box 291C, Edwardsburg, Mich. 49112
Filed Aug. 11, 1970, Ser. No. 62,812
Int. Cl. A47b *67/02, 57/06;* A47c *17/40*
U.S. Cl. 5—10 **6 Claims**



The overhead bunk linkage for positioning and supporting assists in manipulating a load such as a bunk bed between storage and use positions. Spaced linkage assemblies are located one adjacent each end of the bunk designed to operate in spaced planar regions perpendicular to the bunk. Each linkage assembly has front and rear downwardly extending support links, each link mounted for swinging movement from an upper support region where spring means are provided to urge the lower ends of the front and rear links toward each other. Adjacent the lower ends of the links, tracks are provided on the ends of the bunk extending adjacent the plane of the swing of the links with a sliding connection between the links and the tracks. The tracks extend front and rear from the central region of the bunk and preferably are inclined upward in their path toward front and rear. With this sliding connection and a substantial swinging force on the links, the direction of movement of the links relative to the inclined tracks exerts components of lifting force upward on the bunk, thus to assist manual manipulation of the bunk toward and away from a storage position.

3,623,169
APPARATUS FOR HANDLING DISABLED PERSONS
David Richard James, Hasfield, England, assignor to Mecanaids Limited, Gloucester, England
Filed June 16, 1969, Ser. No. 833,631
Claims priority, application Great Britain, June 17, 1968, 28,687/68
Int. Cl. A61g *7/10, 1/02*
U.S. Cl. 5—81 **10 Claims**



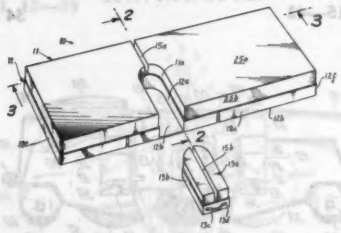


Apparatus for handling disabled or infirm patients comprises a wheeled chassis on which is mounted an upstanding lifting column. A rigid cantilever lifting arm projects from the column. Means are provided to raise and lower the cantilever arm, and a lateral suspension hanger projects symmetrically on both sides of a rigid vertical bearing in the cantilever arm. The hanger provides spaced suspension points for a patient support sling.

3,623,170
MATTRESS WITH SERVICE PLUG AND PROVISION FOR LONG SHEET
John H. Staley, 4512 Timbercrest Lane 76705, % S. M. Tucker, and Wesley D. Ballard, 1011 N. 15th St. 76707, both of Waco, Tex.
Filed Jan. 5, 1970, Ser. No. 677
Int. Cl. A47c *27/08;* A61g *7/02*
U.S. Cl. 5—90 **10 Claims**

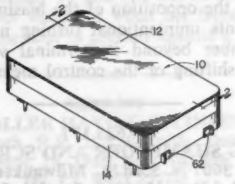
The disclosure is to a mattress comprised of a base of flexibility but of substantial rigidity and a cushion of soft, yieldable, material, as foam rubber with the base having upwardly grooved ribs thereacross longitudinally spaced apart in correspondence with the spacing of the joints or pivot lines of hospital bed frames. An offset is provided into the mattress from one side thereof at relative distance from foot and head at which a conventional bed pan would be used, and a plug in correspondence with cushion and base materials is normally in place

in the offset. A groove extends through the plug in direction transversely of the mattress when the plug is in place and a transverse groove across the cushion distance from offset to other side is in co-extension of the plug groove. Thus a cover sheet, may have that length thereof, in excess of conventional length, folded into the



transversely aligned cushion and plug groove when the plug is in place. Then, with plug removed, the fold part of the sheet from the plug groove may be spread out to protectively cover the offset prior to the insertion of a service item, as a bed pan, into the offset. The invention may include other items than a special bed pan, as, for instance, an inspection mirror.

3,623,171
MATTRESS CONSTRUCTION
Sanford L. Arkin, 700 Alamosa Drive, Claremont, Calif. 91711
Filed Nov. 17, 1969, Ser. No. 877,099
Int. Cl. F16f *3/10*; A47c *27/22, 23/04*
U.S. Cl. 5—351 **7 Claims**



This invention is to a cushion structure for use in bedding and seating, and comprises compression springs embedded within cushion members formed of plastic foam material.

It includes retainers at either end of the compression springs and, in one embodiment, two cushion members bonded in adjacent relation and having a plastic grid embedded therein at their adjacent portions to provide stability.

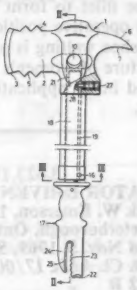
Another embodiment comprises a single foam cushion member on a platform to which the compression springs are operatively connected. The platform is mounted on adjustable legs.

3,623,172
HAND TOOL FOR APPLYING AND REMOVING NUTS
Russell D. Hall, 533 Woodhaven Drive, Lansing, Mich. 48917
Filed Jan. 22, 1970, Ser. No. 4,923
Int. Cl. B25b *27/00*; B25f *1/04*
U.S. Cl. 7—1 G **8 Claims**

A hand tool for use in confined spaces to apply and remove nuts which are locked on a mating threaded member by a locking element having a bendable locking projection thereon, the tool including an elongate actuating member having wrench means on one end portion thereof and angularly disposed abutment surfaces on the opposite end thereof, and a lever member having one end portion pivotally connected to an intermediate portion of the actuating member, the other end portion of the lever member having an angularly extending flange

terminating in a relatively sharp edge adapted to engage and lift the tab of the locking element upon angular movement of the tool.

3,623,173
PORTABLE COMBINATION TOOL
Sixten Robert Hagqvist, Nysatersvagen 87, Trollhattan, Sweden
Filed May 2, 1969, Ser. No. 821,392
Claims priority, application Sweden, May 10, 1968, 6,311/68
Int. Cl. B25f *1/00*
U.S. Cl. 7—8.1 **8 Claims**

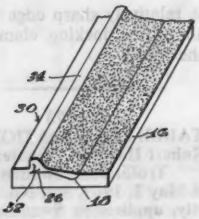


There is provided a portable combination tool intended for manual use in penetrating barriers occurring in such disasters as fire, collapsed buildings and the like, into the region of which it is difficult to carry a plurality of special tools. The combination tool consists of two parts, each provided with its respective shaft capable of being collapsed telescopically one within the other, and which can be locked together in different extended or collapsed positions. One portion of the tool is provided with an axe-and-pick head and a laterally projecting crow bar and suspension loop, while the other portion of the tool is provided with forked leg members, shaped to form a chisel-like member and a cutting tool respectively, and wherein said tool portions can also be used as a wedging means and a hammer.

3,623,174
SHOE WELTING AND METHOD OF MAKING THE SAME
Percy W. Greene, Whitman, and Enoch E. North, Brockton, Mass., assignors to Barbour Welting Company, Inc., Brockton, Mass.
Filed Feb. 9, 1970, Ser. No. 9,653
Int. Cl. A43b *15/00*
U.S. Cl. 12—146 W **3 Claims**

The present invention relates to a novel and improved shoe welting and to the method of making the same. The welting comprises a welt having an upstanding bead, a welt extension and an inseam flange, and is formed by cutting a rectangular fillet of leather to provide a flap hinged

to its upper surface. The flap is provided with a relatively thick depending shoulder in its undersurface, and the body of the cut fillet is also provided with a longitudinally extended groove spaced inwardly from the marginal edge of the fillet. The flap is folded upon itself to provide an upstanding bead, the body of which is made up of the integral shoulder portion and portions of the flap. Novel provision is made for maintaining the bead in its upstanding position and comprises the integral shoulder portion and the longitudinal groove into which the free end of the flap is positioned and maintained by cementing and molding the parts together.



The method comprises the cutting and folding of the cut parts of the fillet to form the bead and folding and cementing it in operative position relative to the cut fillet.

The present shoe welting is particularly adapted for use in the manufacture of women's cemented shoes. However, it is not limited in its application to the manufacture of women's shoes.

3,623,175

NEGATOR DRIVEN TOOTHBRUSH

Frank W. Emerson, 113 Roper Drive, Peterborough, Ontario, Canada

Filed Nov. 5, 1969, Ser. No. 874,226
Int. Cl. A61c *17/00*; A46b *13/02*
U.S. Cl. 15—22 R **7 Claims**

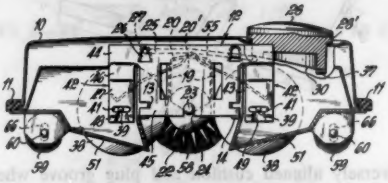
A spring-driven motor assembly for producing oscillatory motion of an output shaft and particularly adapted for use in a power toothbrush assembly. A spring drive producing a substantially constant output torque is wound by a pull-cord winding assembly and released to impart a drive force to an escapement-type motion translator which oscillates an output shaft. Included between the winding assembly and the spring support is a clutch which allows unwinding of the power spring free from any drag effect from the winding assembly.

3,623,176

FLOOR-TREATING APPARATUS

Gunter Leifheit and Johannes Liebscher, Nassau (Lahn), Germany, assignors to Leifheit International Gunter Leifheit KG., Nassau (Lahn), Germany

Filed Dec. 12, 1969, Ser. No. 884,623
Claims priority, application Germany, Dec. 14, 1968, P 18 14 730.3
Int. Cl. A47l *11/32*
U.S. Cl. 15—42 **34 Claims**



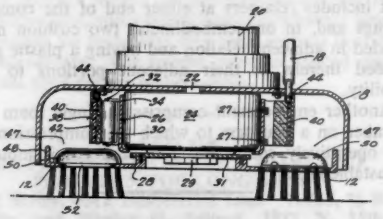
Wheels support a housing for movement on a surface to be treated. A brush roller is mounted in the housing for turnably engaging this surface. Mounting means mounts the brush roller with freedom of adjustment between a lower and an upper position with reference to the surface. Biasing means permanently urges the brush roller to one of these positions. A control member is releasably coupled with the housing and has an outer manually engageable portion and an inner contact portion which cooperates with the mounting means. The control member is turnable between two terminal settings in one of which it moves the brush roller to the other of its positions against the opposition of the biasing means. Detent means prevents unintentional turning movement of the control member beyond its terminal settings and precludes axial shifting of the control member.

3,623,177

RUG SHAMPOOER AND SCRUBBER

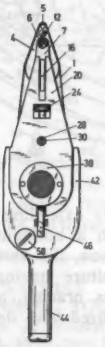
Sam Pack, 3607 N. 53rd St., Milwaukee, Wis. 53216

Filed Dec. 15, 1969, Ser. No. 885,011
Int. Cl. A47l *11/162, 11/03*
U.S. Cl. 15—50 R **13 Claims**



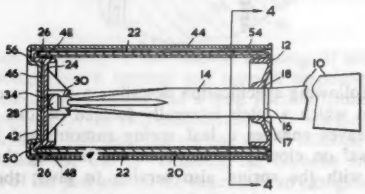
A wheeled housing carries a motor having a shaft extending into the housing to drive a rotor which carries scrubbing brushes and foam-generating rollers. The rollers are engaged under pressure with an annular sponge surrounding the rotor and supplied with liquid detergent which, as the rotor turns, is turned into foam by the manipulation of the sponge as the rollers compress and release it. The brush carrier which is part of the rotor has scoops for deflecting the foam through openings in the carrier to pass downwardly between the bristles of the brushes to loosen dirt in the rug to be lifted to the surface by the action of the brushes.

3,623,178
POWER DRIVEN ENDLESS BELT TYPE CLEANSING MACHINE
August Kurz, 1 Fruhlingstrasse, D–7321 Waschenbeuren, Germany
Filed Oct. 15, 1969, Ser. No. 866,590
Claims priority, application Germany, Oct. 17, 1968, P 18 03 568.2
Int. Cl. A47l *1/04*
U.S. Cl. 15—99 9 Claims



A motor driven cleansing machine having an endless belt driven over a plurality of rollers. One roller forms the front edge of a belt-supporting member, between two converging belt-supporting sides, which is pivotably mounted in a frame. The pivot axis is parallel with the axes of the rollers. The belt-supporting member is held in a neutral position by the tension of the belt but is pivotable in either direction when the front edge of the belt-supporting member is pressed against a surface to be cleansed.

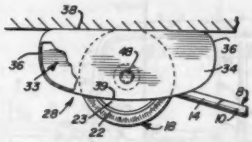
3,623,179
TACKY ROLLER HAVING SPLINED COVER
Eric Michael Roth, R.R. 1, Unionville, Ontario, Canada
Filed Sept. 10, 1969, Ser. No. 856,772
Int. Cl. A47l *25/00*
U.S. Cl. 15—104 A 4 Claims



A particle collecting roller with a tacky surface is mounted on one end of the handle and the roller has a recessed free end cap which will detachably attach to a cover for the roller. With the cover so attached and overlying the roller, splines on the inner cover surface, space the cover from the tacky surface.

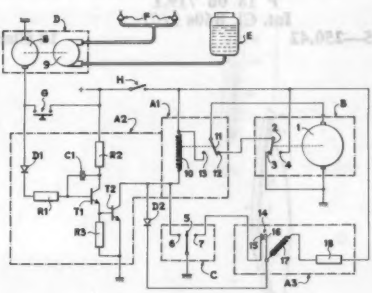
3,623,180
PAINT ROLLER WITH GUARD
Robert L. Anderson, Great Falls, Mont., assignor of a fractional part interest to James R. Paul, Great Falls, Mont.
Filed Oct. 31, 1969, Ser. No. 872,996
Int. Cl. B44d *3/28*
U.S. Cl. 15—230.11 5 Claims

A non-smearing guard for attachment to the respective outward ends of an axle and a complemental free turning axle-supported striping-type paint roller. This attachment comprises an elongated protectively coated plate of prescribed size and shape the median portion of the inward attachable side of which is detachably and



adjustably mounted on a pocket enclosed but accessible end of the axle. Equipped with this guard the roller can be guidingly push-pulled along a side wall surface proximal to the ceiling without smearing paint on the ceiling.

3,623,181
DEVICE FOR CLEANING A WINDSCREEN
Christian Bailly, Le Pecq, France, assignor to Automobiles Peugeot, Paris, and Regie Nationale des Usines Renault, Billancourt, France
Filed Jan. 28, 1970, Ser. No. 6,386
Claims priority, application France, Feb. 20, 1969, 6904266
Int. Cl. B60s *1/02*
U.S. Cl. 15—250.02 1 Claim

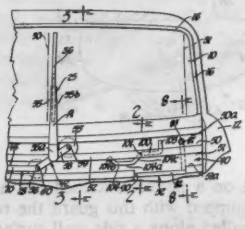


A windscreen cleaner in which timing means associated with a circuit controlling the pump of a window washer is adapted to produce, as soon as said means supply the pump with current, the immediate operation of the wiper motor and continuation of said operation during a suitable number of cycles after the end of the operation of the washer.

3,623,182
TRANSVERSE WIPING APPARATUS HAVING PARK LATCH PARK MECHANISM
Eric G. Parker, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 27, 1970, Ser. No. 67,516
Int. Cl. A47l *1/00*; B60s *1/08*
U.S. Cl. 15—250.17 4 Claims

In a preferred form, this disclosure relates to a windshield wiping apparatus for wiping a windshield of an automotive vehicle. The windshield wiping apparatus includes a windshield wiper, an actuating mechanism for moving the windshield wiper transversely of the windshield between first and second positions while maintaining the wiper in a generally vertical disposition during running operation, and a parking mechanism for moving the wiper from its generally vertical run position to a

park position adjacent the lower edge of the windshield when running operation is being terminated. The actuating mechanism includes a trolley which supports the wiper and which is guided for movement through a first path by a guide means. The parking mechanism includes



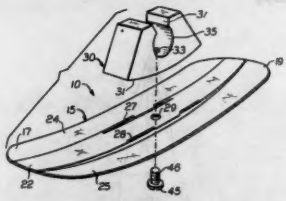
a pair of latch means for holding a roller of the trolley stationary while the remainder of the trolley is pivotally moved about the roller to cause the wiper to be moved from its generally vertical run position towards its park position.

3,623,183
WINDSHIELD WIPERS, ESPECIALLY FOR MOTOR VEHICLES
Karl Wilfert, Gerlingen-Waldstadt, and Rudolf Andres, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Oct. 30, 1969, Ser. No. 872,711
Claims priority, application Germany, Nov. 2, 1968, P 18 06 719.1
Int. Cl. B60s *1/02*
U.S. Cl. 15—250.42 **18 Claims**

A windshield wiper, particularly for motor vehicles, in which an elastic wiper blade is adapted to be connected with a first element which in turn is connected with a second element; the two elements possess the properties of bending springs and, with the wiper blade not resting on the windshield are such that the element connected with the wiper blade has an approximately S-shaped configuration while the other element is curved outwardly.

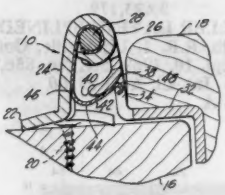
3,623,184
SKID FOR TUBULAR FURNITURE
Paul M. Mazur, 1 William St., New York, N.Y. 10004
Filed Mar. 26, 1970, Ser. No. 22,956
Int. Cl. B60b *33/00*
U.S. Cl. 16—42 **7 Claims**

A skid for tubular furniture serving to implement the facility with which such tubular furniture such as a folding or lounge chair may be moved over a lawn or beach where the chair is used. The skid is formed of a ski shaped dish or shoe having rounded edges, and is arcuate in transverse and longitudinal cross section. An attaching member channel extends longitudinally of the skid, and an attaching member formed either in the shape



of a hollow vertically extending sleeve, or a truncated triangular block with a horizontally extending bore is secured to the ski-shoe, the vertically extending sleeve being used for furniture having vertical legs without lower extremity cross bracing, and the truncated cone attachment being utilized with items of furniture having a bottom cross bar.

3,623,185
SELF-LATCHING HINGE
Robert S. Cartwright, Booneville, and James R. Deadrick, Winston-Salem, N.C., assignors to Stewart-Warner Corporation, Chicago, Ill.
Filed Feb. 2, 1970, Ser. No. 7,876
Int. Cl. E05d *11/08*
U.S. Cl. 16—142 **7 Claims**

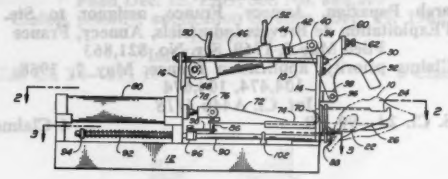


The following specification describes a door or cabinet hinge in which a latch integrally formed on one of the hinge leaves engages a leaf spring camouflaged by the other leaf on closing of the door for latching the door closed with the spring also serving to pivot the door closed.

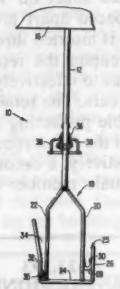
3,623,186
POULTRY HANDLING
Mitchell W. Panek, Chicago, Ill., assignor to Swift & Company, Chicago, Ill.
Original application Sept. 8, 1967, Ser. No. 666,434, now Patent No. 3,541,634, dated Nov. 24, 1970. Divided and this application Oct. 27, 1970, Ser. No. 84,336
Int. Cl. A22c *21/00*
U.S. Cl. 17—11 **5 Claims**

The keel bone is removed from eviscerated fowl by supporting the latter preferably from the interior of the body cavity and applying a compressive force against the keel bone from outside the body and in an inward direction. Thereafter the keel bone is engaged within the cavity and pulled free through the posterior opening in the fowl carcass. An apparatus for performing the method includes a tubular support for insertion into the body cavity, and

a punch member drivable against the exterior of the keel bone. An aperture in the tubular support allows the keel bone to be thus pushed partly into the support. Thence a claw that is reciprocable within the tubular support extracts the keel bone by withdrawing same through the rear thereof. An ejector ram is also actuated by the claw to propel a completed carcass from the support when the claw is returned to the forward end thereof.



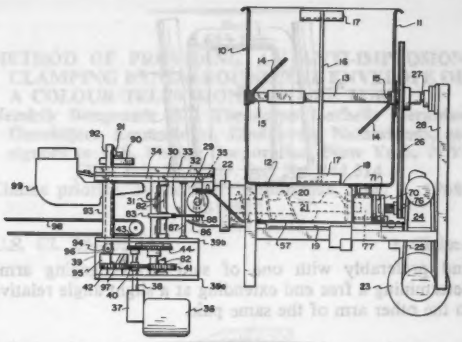
3,623,187
SKINNING TOOL
Edward F. Grubbs, Rte. 2, Walnut Cove, N.C. 27052
Filed Apr. 21, 1970, Ser. No. 30,505
Int. Cl. A22b *5/16*
U.S. Cl. 17—21 **7 Claims**



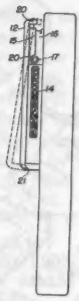
A tool for aiding in the manual skinning of small animals comprising a vertical rod support suspended from overhead support means and a base portion connected to the lower end of the rod and positioned at working height for a skinner. The base has on one side a tailbone extraction section for use in removing the tailbone from the tailskin of the pelt and on the other side an elongated taper section within which a hind leg of the carcass is wedged to support the carcass as the pelt is stripped downwardly therefrom.

3,623,188
MOLDING APPARATUS
James A. Holly, Richton Park, Ill., assignor to Hollymatic Corporation
Filed Nov. 28, 1969, Ser. No. 880,695
Int. Cl. A22c *7/00*
U.S. Cl. 17—32 **21 Claims**

Molding apparatus for molding articles such as patties from a plastic material such as ground raw meat comprising a mold having a mold opening, force feed means such as a grinder screw for moving the material into the mold opening under increasing pressure as the force feed means is operated, means for terminating the feeding when the material in the mold opening reaches a predetermined pressure corresponding to a desired density of the article in the mold opening and means for thereupon removing the article from the mold opening, the molded article itself thereby acting as a part of the timing mechanism to terminate the feeding when the article has achieved the desired density or consistency.



3,623,189
SELF-LOCKING CLIP FOR SUPPORTING AN ARTICLE ON A BELT OR OTHER SUPPORT
Mieczyslaw Wilczynski, Westchester, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Nov. 24, 1970, Ser. No. 92,351
Int. Cl. A44b *21/00*
U.S. Cl. 24—3 F **8 Claims**

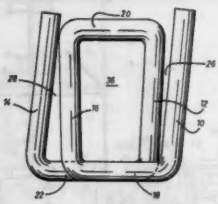


Self-locking belt clip for miniature radio pager or other device, for supporting the same on a belt or pocket of the user, or on another support. The clip is secured to the device by a pair of brackets connected to each other by a pivot rod, with a spring about the pivot rod holding the brackets in position so that the clip is closed against the device. The brackets have locking tabs which engage the other bracket to lock the clip and prevent opening thereof. The lock is released by moving the clip so that one bracket is moved axially along the pivot rod and the locking tabs clear the other bracket and permit the clip to be opened. The same spring which holds the clip closed also holds the two brackets in the axial position which locks the clip.

3,623,190
BUCKLE
Thomas J. Karass, 411 Kindersley Ave., Mount Royal, Quebec, Canada
Filed Nov. 17, 1969, Ser. No. 877,100
Int. Cl. A44b *11/00*
U.S. Cl. 24—74 I **3 Claims**

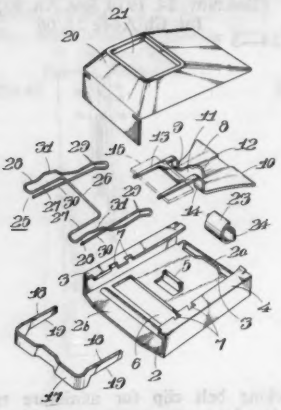
A buckle comprising a single continuous length of material particularly adapted to readily secure end-to-end two ends of strapping. The continuous length of ma-

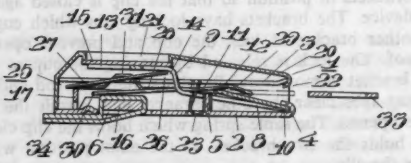
terial is bent to form two pairs of strap-engaging arms. The two strap-engaging arms of each pair of arms are arranged in closely spaced relationship along each other



and preferably with one of said strap-engaging arms determining a free end extending at a slight angle relative to the other arm of the same pair.

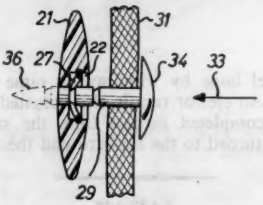
3,623,191
SEAT BELT BUCKLE
Yoshihiro Hayashi, Kasugai, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishibiwajima-cho Nishikasugai-gun, Aichi-Prefecture, Japan
Filed Dec. 4, 1970, Ser. No. 95,216
Int. Cl. A44b *11/26*
U.S. Cl. 24—77 **1 Claim**





A seat belt buckle characterized in employing a single wire spring in the buckle body comprising a lock plate engageable with a tongue plate and a belt bar for securing the other tongue of the belt. Said single wire spring is adapted to be secured on a base plate at its one portion and to exert no springy force on each element of the buckle body besides the required portions. It is so constructed to effect two independent springy actions thereby lifting up the free end of the lock plate and pressing down the belt bar effectively without an aid of any other component.

3,623,192
BUTTON
Zareh Papazian, Annecy, France, assignor to Ste. d'Exploitation de Brevets Industriels, Annecy, France
Filed May 5, 1969, Ser. No. 821,863
Claims priority, application France, May 7, 1968, 104,474, 104,674
Int. Cl. A44b *1/18*
U.S. Cl. 24—90 PR **4 Claims**



A button assembly comprises a female member having the configuration of the desired button and a male member cooperative with the female member to attach same to a piece of cloth. The female member is provided with an internal recess and retaining means is disposed within the recess to engage with the male member. The male member comprises an elongated shaft on which are provided a plurality of axially spaced apart grooves. During assembly, the male member is inserted through the cloth into the female member whereupon the retaining means engages with one of the grooves to effectively connect together the male and female members. The retaining means comprises a washer having flexible projecting arms which engage in one of the grooves and the lip portion of the male member is then cut off. Alternatively, a decorative covering can be provided over the female member after the tip portions has been removed.

3,623,193
ORNAMENTAL MONEY CLIP
Hansen L. Rikard, 7482 E. 48th St., Tulsa, Okla. 74145
Filed June 8, 1970, Ser. No. 44,244
Int. Cl. A44b *21/00*
U.S. Cl. 24—261 PC **2 Claims**

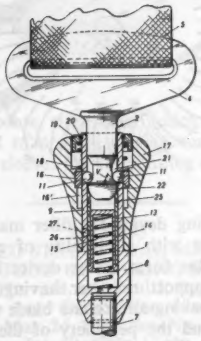
An ornamental money clip for holding paper money in a folded position, the improvement including coil springs structure in a wire pattern for holding the folded money; and means to fasten the wire pattern in combination with a selected medallion. The said combination having sufficient resiliency to open and close regardless of the expansion required.

3,623,194

QUICK RELEASE COUPLING, PARTICULARLY FOR SAFETY HARNESSES FOR CARS

Carl Erik Claeson, Molndal, and Sten Axel Magnus Smederod, Goteborg, Sweden, assignors to Goteborgs Bandvaveri AB, Goteborg, Sweden

Filed Dec. 15, 1969, Ser. No. 885,207
Claims priority, application Sweden, Dec. 19, 1968, 17,425/68
Int. Cl. A44b *17/00*
U.S. Cl. 24—211 N 8 Claims



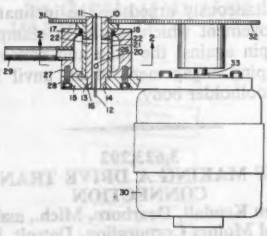
A snap fastener of the type in which a grooved locking pin is retained in releasable axial engagement in a housing by means of locking balls which are held in a non-locking position by a spring loaded bush until the latter is displaced by insertion of the pin, is provided with a safety member preventing said displacement being inadvertently causes by the insertion of an article of even slightly less diameter than the pin. An axially movable spring loaded ring holds the balls in locking engagement with the pin groove, said ring is moved to release the pin by pulling an axially movable knob or by pressing an arm of a lever pivoted on the housing.

3,623,195

PROCESS AND APPARATUS FOR INTERTWINING YARN

Stanley R. Nechvatal, Raleigh, and William N. Parks, Durham, N.C., assignors to Hercules Incorporated, Wilmington, Del.

Filed Dec. 30, 1969, Ser. No. 889,103
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 3 Claims



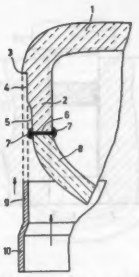
Jet apparatus and process for intertwining, entangling or interlacing synthetic yarn to improve its coherency is disclosed. Yarn is intermittently subjected to the action of a fluid, e.g., air, under pressure as it is pulled through a passageway. The intermittent introduction of air through jet conduits into the yarn passageway creates a kind of turbulence which causes the filaments of the yarn to be intertwined in a relatively uniform pattern at substantially uniform spaced sites therealong.

3,623,196

METHOD OF PROVIDING AN ANTI-IMPLOSION CLAMPING BAND AROUND THE ENVELOPE OF A COLOUR TELEVISION PICTURE TUBE

Hendrik Bongenaar and Theodorus Cornelis Gerardus Doreleijers, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 24, 1969, Ser. No. 844,514
Claims priority, application Netherlands, Aug. 1, 1968, 6810978
Int. Cl. H01j *9/18*
U.S. Cl. 29—25.13 3 Claims



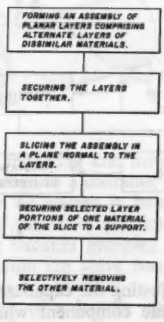
A method of providing without damage to the seam, an anti-implosion clamping band upon a colour television picture tube having envelope window and cone secured together by means of a solder glass. A profiled band comprising narrow and wide portions is slid, with its wide portion foremost, from the window entirely over the mould match line; permanent deformation of the band being avoided by heating the band or by providing saw cuts in the more narrow portion of the band.

3,623,197

ELECTROSTATIC DEFLECTION ELECTRODE SYSTEM FOR ELECTRON BEAM DEVICE HAVING AN ARRAY OF LENSES

William L. Jones, Owensboro, Ky., assignor to General Electric Company

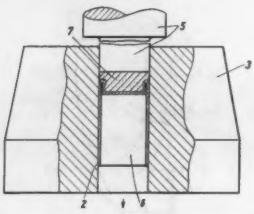
Filed Mar. 27, 1970, Ser. No. 23,221
Int. Cl. H01j *9/00*
U.S. Cl. 29—25.14 4 Claims


FORMING AN ASSEMBLY OF PLANAR LAYERS COMPRISING ALTERNATE LAYERS OF DISSIMILAR MATERIALS.
SECURING THE LAYERS TOGETHER.
SLICING THE ASSEMBLY IN A PLANE NORMAL TO THE LAYERS.
SECURING SELECTED LAYER PORTIONS OF ONE MATERIAL OF THE SLICE TO A SUPPORT.
SELECTIVELY REMOVING THE OTHER MATERIAL.

Accurately spaced, parallel conductors forming an array of deflection electrodes are provided to respectively

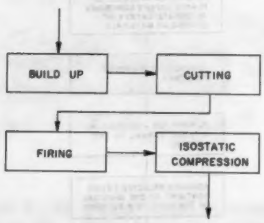
deflect an electron beam emanating from one or more of an array of lenses. The array of electrodes are constructed by first forming a stack of planar sheets comprising alternate layers of the electrode material and a second removable material which acts as an accurate spacer during fabrication of the array.

3,623,198
PROCESS FOR MAKING A THERMIONIC CATHODE
Walter Held, Gunzburg, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany
Filed May 5, 1969, Ser. No. 821,717
Claims priority, application Germany, May 4, 1968, P 17 64 260.3
Int. Cl. H01j *9/16*
U.S. Cl. 29—25.18 **4 Claims**



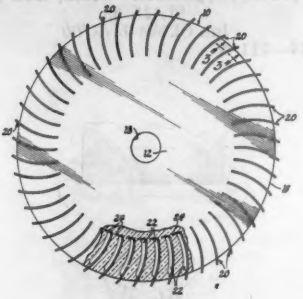
A process for making a thermionic cathode for use in the emission system of a cathode ray tube, the cathode being composed of a sintered pressed body which is to be the electron emitting element and which is formed by pressing powdered material of which the body is to be made into a cavity of an appropriately shaped cathode cup in such a manner that the emission body is formed to communicate with the cathode cup over a large area and that the cavity of the cathode cup is deformed in such a manner that the emission body is permanently clamped into the cavity of the cathode cup.

3,623,199
METHOD FOR ADJUSTING CAPACITANCE VALUES
Robert Swart, Newtown, Conn., assignor to Vitramon Incorporated, Monroe, Conn.
Filed Mar. 26, 1968, Ser. No. 716,244
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.42 **4 Claims**



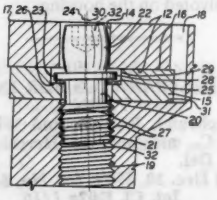
A method of adjusting the capacitance value of a fired monolithic electronic component which comprises subjecting the fired component to an increased pressure and a temperature in the softening range of the dielectric to reduce the volume of the void population in the dielectric.

3,623,200
BLENDING DEVICE
Joseph Curcio, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 30, 1970, Ser. No. 23,765
Int. Cl. B23d *71/00*
U.S. Cl. 29—78 **4 Claims**



A rotary blending device for filler material including a support member with a plurality of cutter bits each having a blade. One form of the device includes a disc-shaped flexible support member having a plurality of cutter bits, each having an arcuate blade with a shearing face, spaced around the periphery of the support member. The device polishes the filler material on a surface while concurrently removing the excess filler in chip form.

3,623,201
RAKE TOOLHOLDER
Manfred Wallace Gustafson, Fagersta, Sweden, assignor to Fagersta Bruks AB, Fagersta, Sweden
Filed Sept. 19, 1969, Ser. No. 859,273
Claims priority, application Sweden, Sept. 24, 1968, 12,853/68
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **3 Claims**

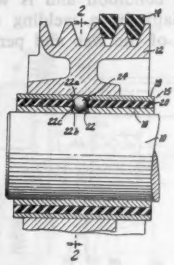


A toolholder for a rake utilizing a threadably adjusting clamping pin which, during threading into an appropriately slightly inclined threaded opening in the tool holder body, is simultaneously urged by the inclination through a pivoting movement which results in clamping engagement of the pin against the rake and concomitantly results in clamping engagement of an anvil between the rake and the toolholder body.

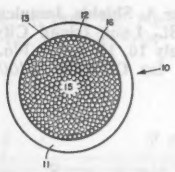
3,623,202
METHOD OF MAKING A DRIVE TRANSMITTING CONNECTION
Glen Allen Kendall, Dearborn, Mich., assignor to General Motors Corporation, Detroit, Mich.
Original application Nov. 27, 1968, Ser. No. 779,479, now Patent No. 3,541,810, dated Nov. 24, 1970. Divided and this application Feb. 20, 1970, Ser. No. 12,945
Int. Cl. B23p *11/00, 19/00*; F16d *3/58, 7/00*
U.S. Cl. 29—148.4 A **4 Claims**

There is a drive connection disposed between a rotatable input and a member driven by the input, which in-

cludes inner and outer cylindrical sleeves having a compressed elastomeric, torque-transmitting sleeve therebetween. The sleeves have aligned radial holes formed therein to accommodate steel balls which are effective on torque overload to provide driving contact between the inner and outer sleeves thereby limiting elastomeric sleeve slip and wear.

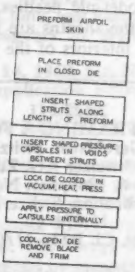


3,623,203
REINFORCED STRUCTURAL MEMBERS AND METHOD OF MAKING SAME
Jim Henshaw, Harvard, and Paul J. Roy, Lowell, Mass., assignors to Avco Corporation, Cincinnati, Ohio
Filed Mar. 24, 1970, Ser. No. 22,199
Int. Cl. B23p *17/00*
U.S. Cl. 29—155 R **11 Claims**



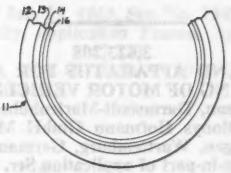
This invention covers a structural member having a high strength to weight ratio. The invention relates to methods of processing high strength-high modulus (of elasticity) composite material used in conjunction with metal carriers and result in integrated metal-composite structural elements. More specifically, the high strength-high modulus composite is deposited within passages or hollows within the metal carriers.

3,623,204
METHOD OF FABRICATING HOLLOW GAS TURBINE BLADES
Joseph A. Wagle, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 2, 1970, Ser. No. 7,627
Int. Cl. B23p *15/02, 15/04*
U.S. Cl. 29—156.8 H **10 Claims**


PREFORM AIRFOIL SKIN
PLACE PREFORM IN CLOSED DIE
INSERT SHAPED STRUTS ALONG LENGTH OF PREFORM
INSERT SHAPED PRESSURE CAPSULES IN VOIDS BETWEEN STRUTS
LOCK DIE CLOSED IN VACUUM HEAT PRESS
APPLY PRESSURE TO CAPSULES INTERNALLY
COOL, OPEN DIE REMOVE BLADE AND TRIM

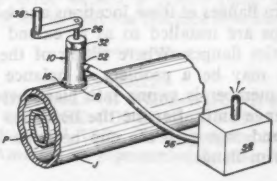
A method for fabricating hollow, reinforced blades for use in gas turbine engines is disclosed wherein a skin layer preform is positioned against the die wall of a closed die, reinforcing support struts are placed within the preform and thin walled pressure tubes are inserted therebetween. The die is heated to 1500° F. whereafter a fluid is introduced into the heated tubes subjecting the walls thereof to a pressure of 12,000 p.s.i. whereby the tubes are deformed outwardly against and into intimate contact with the preform and struts. The fluid pressure and die temperature cooperate to effect a diffusion bond between the blade members thereby forming a hollow blade having reinforcing struts therein.

3,623,205
COMPOSITE BEARING STRUCTURE
Bruce E. Scott, Wyckoff, N.J., assignor to Curtiss-Wright Corporation
Filed Dec. 24, 1969, Ser. No. 888,017
Int. Cl. B32b *15/18*
U.S. Cl. 29—196 **7 Claims**



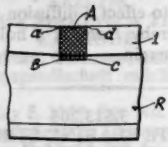
A journal bearing structure in which a base metal member has a silver heat-conducting and fatigue-resistant intermediate layer and a bearing surface of lead-tin alloy, with a pure tin barrier layer between the lead-tin alloy and the silver to control diffusion and migration of the tin from the alloy in order to maintain corrosion resistance of the bearing surface.

3,623,206
VACUUM SEAL-OFF VALVE TOOL
Robert N. Hager, Jr., Gainesville, Fla., assignor to General Dynamics Corporation, San Diego, Calif.
Filed Jan. 7, 1970, Ser. No. 1,162
Int. Cl. B23p *19/04*
U.S. Cl. 29—240 **6 Claims**



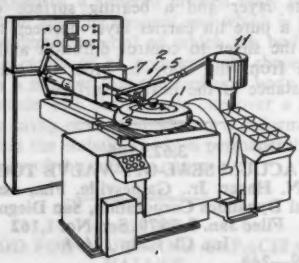
A valve tool for removing and installing the cap portion of a fitting attached to a container or vacuum system while the container or system is being evacuated. The bell-shaped body of the valve positions over the pump-down fitting during vacuum pumping thereof. A socket wrench enclosed within the valve body engages the cap portion of the fitting for installation or removal thereof by manual operation of a handle outside of the valve body. A shaft extending through a seal in the valve body, connects the socket wrench to the handle. A port located in the valve body provides passage means for evacuating gases from the system or container.

3,623,207
METHOD FOR REPAIR OF RAILS
Ivo Zoso, 316 Barry Ave., Chicago, Ill. 60657, and Thomas F. Kennedy, Jr., 705 Benwood Drive, Carbondale, Ill. 62901
Filed Sept. 3, 1968, Ser. No. 756,978
Int. Cl. B22d 19/10; B23p 7/00
U.S. Cl. 29—401 4 Claims



Process and apparatus for repairing defects in rail heads and webs by removal of a portion of the rail head embodying the defect, enclosing the removed portion within a housing having a pouring space surrounding the removed portion and a pouring basin communicating with the space and through which the molten metal is introduced and a means for preheating the rail prior to metal pouring.

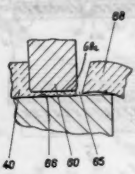
3,623,208
METHOD AND APPARATUS FOR AUTOMATIC BALANCING OF MOTOR VEHICLE WHEELS
Dionys Hofmann, Darmstadt-Marienhohe, Germany, assignor to Dionys Hofmann GmbH Maschinenfabrik, Onettmettingen, Wurttemburg, Germany
Continuation-in-part of application Ser. No. 800,882, Feb. 20, 1969. This application Sept. 23, 1969, Ser. No. 864,941
Int. Cl. B23q 17/00
U.S. Cl. 29—407 2 Claims



While the vehicle wheel remains mounted on the device which has automatically determined the angular locations and amounts of the weights needed to balance the wheel at the two rim flanges, the tire beads are distorted away from the rim flanges at these locations and balance weight holding clips are installed so as to extend out over the respective rim flanges. Where tilting of the clips during installation may be a problem, a balance weight form simulating member is swung into place between the clip and rim flange until after the tire bead has been allowed to return and thus grip the clip between itself and the respective rim flange.

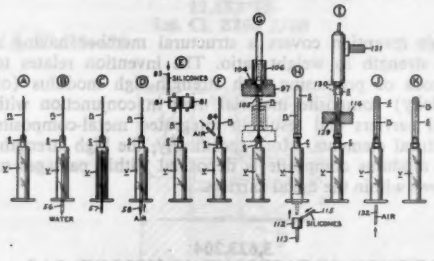
3,623,209
METHOD FOR SEPARATING BLANKS FROM PLASTIC SHEETS
Gerhard Zühlke, Geroldswil, and Paul Brändli and Max Spälti, Zurich, Switzerland, assignors to Zuhlke & Brandli AG, Zurich, Switzerland
Filed Apr. 25, 1969, Ser. No. 819,404
Claims priority, application Switzerland, Aug. 14, 1968, 12,230/68; Nov. 5, 1968, 16,434/68
Int. Cl. B23p 17/00
U.S. Cl. 20—413 4 Claims

Mirrors for use by dentists or for similar purposes are produced by clamping a blank of strongly light-reflecting synthetic thermoplastic material between annular male and female mirror frame portions. Such clamping step is carried out simultaneously with separation of the blank from a web of sheet material which is maintained in flattened and stretched condition and is weakened in the zone around the blank by a welding electrode which softens the material of the web and penetrates into the



thus softened material by being biased toward a supporting surface located opposite the electrode. The male mirror frame portion serves as a means for tearing the blank from the weakened zone and for simultaneously moving the marginal portion of the thus separated blank against the internal surface of the female mirror frame portion.

3,623,210
METHOD OF AND APPARATUS FOR APPLYING A SHEATH TO A HYPODERMIC NEEDLE SECURED IN A VIAL
Walter A. Shields, Jamaica, N.Y.
(38—09 24th St., Long Island City, N.Y. 11101)
Filed July 10, 1969, Ser. No. 840,668
Int. Cl. B23p 19/00
U.S. Cl. 29—429 20 Claims

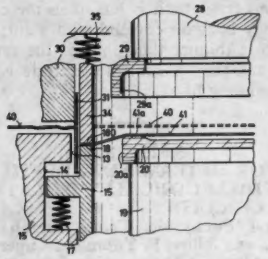


The vials having hypodermic needles secured therein are intermittently presented to successive stations where the vials are internally cleaned, the junctures between the vials and the hypodermic needles are dried, the hypodermic needles are externally lubricated, the sheaths are engaged over the hypodermic needles, the interior of the vials are lubricated, the sheaths are fully engaged on the vials, and finally the interiors of the vials are dried.

3,623,211
METHOD OF FRAMING A FOIL PORTION
Gerhard Zuhlke, Geroldswil, Switzerland, assignor to Schweiger & Schweizer AG, Zug, Switzerland
Filed Oct. 6, 1969, Ser. No. 864,048
Claims priority, application Switzerland, Oct. 21, 1968, 15,674/68
Int. Cl. B23p 11/02
U.S. Cl. 29—448 6 Claims

In order to frame a foil portion with a mirror surface, a foil is perforated along a circular line, a marginal zone of the foil is frictionally held within the endless

line, the foil is cut along the endless line, and the marginal zone is firmly clamped and moved over a first frame part and tensioned, whereupon a second frame



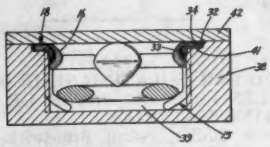
part is pressed against the first frame part and clamps the tensioned foil to the first frame part without any wrinkles or folds.

3,623,212

METHOD OF MAKING SUTURING MEMBER ON A DEVICE

Francis W. Child, Maple Plain, Minn., assignor to Washington Scientific Industries, Inc., Minnetonka, Minn.

Filed Apr. 21, 1969, Ser. No. 817,988
Int. Cl. B23p *9/00*
U.S. Cl. 29—445 **19 Claims**



A suturing member associated with an implantable device, as a heart valve, for accommodating sutures to join the device to living tissues. The suturing member has a porous fabric cover surrounding a semi-rigid core of plastic material. The outer surface of the plastic material is bonded to the inner surface of the fabric cover.

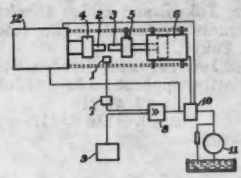
3,623,213

PROCESS AND MACHINE FOR FRICTION WELDING

Mario Sciaky, Saint-Cloud, and Emmanuel Julien Thirion, Paris, France, assignors to Welding Research, Inc., Chicago, Ill.

Filed Jan. 14, 1969, Ser. No. 791,023
Claims priority, application France, Mar. 8, 1968, 143,078
Int. Cl. B23k *27/00, 31/02*
U.S. Cl. 29—470.3 **8 Claims**

This disclosure relates to the process of friction welding and, specifically, to a method and apparatus whereby the mechanical work transferred to the parts to be welded is controlled in accordance with a pre-established program of energy versus time. The energy being supplied to the work pieces is determined by measuring the angular rotation and the resistant torque between the two parts rubbing one against the other, or by measuring the temperature of the parts. The measured values are compared to the preset reference values and the axial force between the parts being welded is controlled so as to maintain



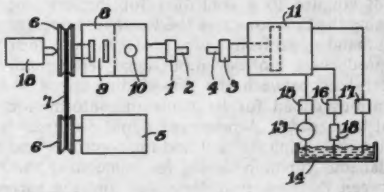
the error between the reference and the energy input as close to zero as possible.

3,623,214

FRICTION WELDING MACHINE AND PROCESS

Mario Sciaky, St.-Cloud, and Emmanuel L. Thirion, Paris, France, assignors to Welding Research, Inc., Chicago, Ill.

Filed Jan. 29, 1969, Ser. No. 794,872
Claims priority, application France, Apr. 5, 1968, 147,227
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 **10 Claims**



The disclosure concerns a method of friction welding in which the power absorbed by the parts rubbing one against the other is caused to follow a preset program of power. The absorbed power is measured continuously by measuring separately the friction couple and the angular velocity of the work piece which is rotating and forced against the stationary work piece. The absorbed power is then compared to a preset power program and the difference or error between the two is fed to a servo amplifier and operator which functions to cause the absorbed power to follow the preset power program.

Should the error exceed a preset value a signalling device is energized to alert the machine operator.

3,623,215

METHOD OF MAKING WIRE-WOUND SHAPED CHARGE CONICAL LINER

Clarence E. Weinland, Vista, Calif., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed June 5, 1970, Ser. No. 59,792
Int. Cl. B23k *31/02*
U.S. Cl. 29—477.3 **2 Claims**

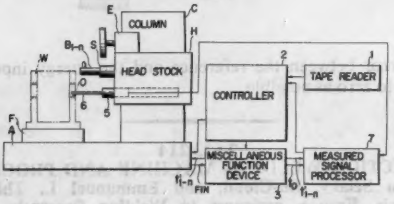
A method of fabricating a conical metal cavity liner such that its mass in any section transverse to its axis is uniformly distributed. The method includes the steps of anchoring copper or other wire in place on a conical mandrel and winding this basic wire onto the mandrel until a cone is formed, winding a soldering or filler wire into the grooves formed between adjacent turns of the basic wire winding, heating the mandrel with the double winding in place so as to fuse the filler wire and basic wire into an integral unit. After cooling, the cone formed is removed as a unit from the mandrel.

3,623,216

AUTOMATIC TOOL POSITION COMPENSATING SYSTEM FOR A NUMERICALLY CONTROLLED MACHINE TOOL

Kenzo Aihara, Tokyo, and Hideo Hirokawa, Kawasaki, Japan, assignors to Ikegai Tekko Kabushiki Kaisha, Minato-ku, Tokyo, Japan

Filed July 10, 1969, Ser. No. 840,737
Claims priority, application Japan, July 17, 1968, 43/49,916
Int. Cl. B23q 3/157
U.S. Cl. 29—568 1 Claim



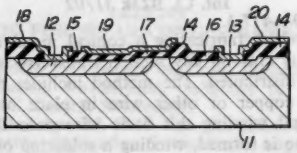
Further, as described in U.S. application S.N. 839,723, filed July 7, 1969 in the names of Tanabe et al. and assigned to the assignee of the present application, by constructing the main spindle S thereof while maintaining a definite position relative thereto. The measuring element coupled to a controller for the machine tool for sensing the dimensions of the workpiece upon receipt of a command signal from a tape reader through the controller. It produces a tool deviation signal representative of the differences between the sensed dimensions and the dimensions called for by command information read by said tape reader. A measured signal processor is coupled to the measuring element and the controller and to a miscellaneous function device for calculating the deviation between the measured dimension and the corresponding programmed dimensions from the output from the measuring element and to memorize the result of the calculation as a compensating value. The compensating value memorized in the measured signal processer is transmitted to the controller as pulses so that the compensation of the position of the cutting tools and the table of the machine can be carried out automatically, depending on the dimensions sensed by the measuring means.

3,623,217

METHOD OF MANUFACTURING A FIELD EFFECT SEMICONDUCTOR DEVICE

Hiroto Kawagoe, Kodaira-shi, and Masaharu Kubo, Kokubunji-shi, Japan, assignors to Hitachi, Ltd., Chiyoda-ku, Tokyo, Japan

Original application May 28, 1968, Ser. No. 732,664. Divided and this application Nov. 26, 1969, Ser. No. 880,409
Int. Cl. B01j 17/00; H01g 13/00
U.S. Cl. 29—571 3 Claims



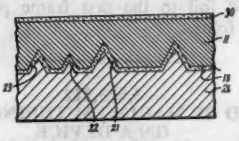
A method of manufacturing an MIS type FET, wherein, after source and drain regions are formed in a surface of a semiconductor body, a part of an insulating film which has been used as a selective diffusion mask is removed to expose a carrier path between the regions and a continuous part of the source region, while the other part of the insulating film covering the semiconductor surface, especially, the surface portion of the drain region adjacent to the carrier path is left, then the exposed surface of the body is again covered with a further insulating film which is thinner than that of the remaining insulating film, and then a control electrode is formed on the further insulating film.

3,623,218

METHOD FOR DETERMINING DEPTH OF LAPPING OF DIELECTRICALLY ISOLATED INTEGRATED CIRCUITS

Hajime Mitarai, Sunnyvale, Calif., Carroll E. Nelson, Dallas, Tex., and Albert P. Youmans, Cupertino, Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Jan. 16, 1969, Ser. No. 791,659
Int. Cl. H01l 7/00, 7/50
U.S. Cl. 29—577 7 Claims



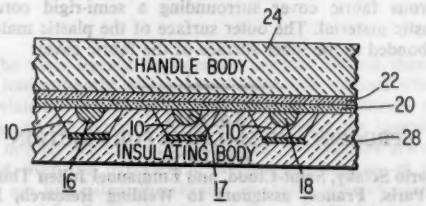
Method and structure for determining the depth of lapping of dielectrically isolated integrated circuits utilizing at least two etched recesses which are generally V-shaped in cross-section and which have apexes at different elevations.

3,623,219

METHOD FOR ISOLATING SEMICONDUCTOR DEVICES FROM A WAFER OF SEMICONDUCTING MATERIAL

Arthur Irwin Stoller, North Brunswick, and William Henry Schilp, Flemington, N.J., assignors to RCA Corporation

Filed Oct. 22, 1969, Ser. No. 868,470
Int. Cl. B01j 17/00; H01l 5/00
U.S. Cl. 29—580 8 Claims



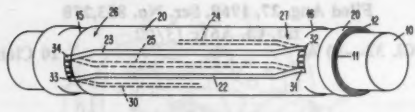
An array of devices is first formed in a silicon wafer. A protective layer of silicon nitride is deposited on the surface of the wafer, and a glass handle body having a thermal expansion coefficient closely matching that of silicon is sealed to the silicon nitride layer. That portion of the wafer between adjacent devices is etched away, and a body of a softened glass which has a like expansion coefficient, but is less refractory than the glass handle body, is hot-pressed into the array of isolated devices. The handle body is then removed by etching.

3,623,220

METHOD OF MAKING A TUBULAR PRINTED CIRCUIT ARMATURE USING PLATING TECHNIQUES

Gordon G. Chase, Nederland, and John E. Parker, Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 29, 1970, Ser. No. 6,816
Int. Cl. H02k 15/02
U.S. Cl. 29—598 9 Claims



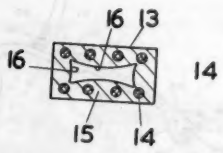
A tubular armature, intended for use with an electric motor, is made by plating a first layer of copper onto a stainless steel mandrel, coating the layer of copper with epoxy and fiberglass to form a support cylinder, curing the epoxy, removing spaced portions of the epoxy-glass cylinder in two spaced bands, thus leaving between the bands a mid-portion of the support cylinder which is equal in length to the desired length of the armature, plating a second layer of copper on the support cylinder so as to overlap and make electrical connection to the spaced bands of exposed copper of the first layer, removing the composite cylinder from the mandrel, and photo-etching an armature winding circuit in the inner and outer copper layers such that the crossover portions of the inner and outer winding conductors at each end of the armature are separated by the epoxy-glass cylinder, and such that the interconnections of the individual inner and outer winding conductors are made by copper tabs which extend axially into the spaced bands of overlapped layers of copper.

3,623,221

METHOD OF FABRICATING A TUBULAR SUPERCONDUCTOR ASSEMBLY

Peter Harlow Morton, Solihull, and Anthony Clifford Barber, Lichfield, England, assignors to Imperial Metal Industries (Kynoch) Limited, Witton, Birmingham, Warwickshire, England

Original application May 4, 1967, Ser. No. 636,203, now Patent No. 3,472,944, dated Oct. 14, 1969. Divided and this application May 21, 1969, Ser. No. 836,682
Claims priority, application Great Britain, May 20, 1966, 22,581/66
Int. Cl. H01r 11/00
U.S. Cl. 29—599 10 Claims



A method of fabricating an assembly of two or more superconductor elements embedded within the wall of a metallic tube wherein the elements are located in annular formation within a tube of non-superconductor material, the assembly is heated to enhance bonding, and the assembly is extruded to form an integral tube.

3,623,222

DOUBLE GRIP PRUNER

George J. Akers and Wilfred M. McCord, Jr., Louisville, Ky., assignors to Vermont American Corporation, Louisville, Ky.

Filed Oct. 16, 1969, Ser. No. 867,029
Int. Cl. B26b 17/02
U.S. Cl. 30—190 12 Claims

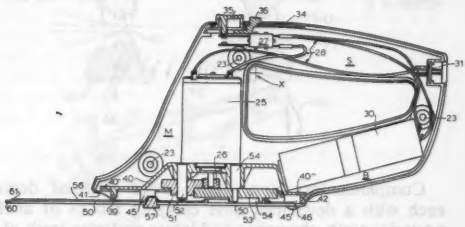
A pruner comprising two separated squeeze-grip operating handles adapted for simultaneous squeeze-grip operation by both hands for increasing the cutting power transmitted to the pruner cutting jaws; and which operating handles are in longitudinally spaced relation along the pruner shaft to facilitate the maneuvering of the jaws relatively to the branches of a tree, bush or the like.

3,623,223

CORDLESS ELECTRIC GRASS SHEAR

James E. Edgell, Bradford Woods, and Daniel A. Maniero, Pittsburgh, Pa., and William C. Albertson, Jr., Rocky River, Ohio, assignors to H. K. Porter Company, Inc., Pittsburgh, Pa.

Filed Nov. 7, 1969, Ser. No. 874,864
Int. Cl. B26b 19/02
U.S. Cl. 30—220 12 Claims



A battery operated grass shear incorporates a low friction, flexible tooth blade adapted to slide over tough grass without stopping the cutting action and further incorporates a hollow housing having various specially disposed handle, motor and battery compartments.

3,623,224

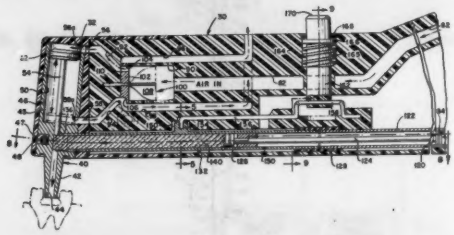
DENTAL INSTRUMENT

Donald G. Smith, 299 Alhambra Circle, Coral Gables, Fla. 33146

Filed Nov. 28, 1969, Ser. No. 880,566
Int. Cl. A61c 5/04
U.S. Cl. 32—60 20 Claims

A housing supports a working tip having a bore formed therethrough, a fluid operated plunger being mounted

for reciprocation within said bore to feed amalgam from the end of said working tip and to compact amalgam in a tooth. Storage means is provided within the housing for receiving a reserve supply of amalgam, and separate transfer feed means is provided within the housing for feeding amalgam directly from the storage means into the bore



formed in the working tip and into the path of movement of the reciprocating plunger during operation of the instrument. The feed means is continuously operated while the instrument is in use, and manual control means is also provided in certain modifications for additionally controlling the feed means.

3,623,225

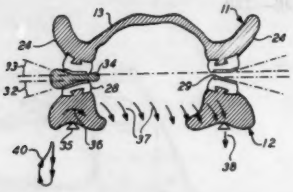
ARTIFICIAL DENTURE

Charles M. Moore, 205 Park St., Montclair, N.J. 07042

Filed May 21, 1970, Ser. No. 39,358

Int. Cl. A61c *13/00*

U.S. Cl. 32—8 **22 Claims**



Complementary upper and lower artificial dentures, each with a developed base carrying blocks of artificial posterior teeth, the upper and lower posterior teeth of said dentures having meeting occlusal surfaces which are centralized antero-posteriorly and divided into lingual and buccal parts, the lingual occlusal part of said upper teeth being normally horizontal and relatively wide with the buccal part relatively narrow and sloping a few degrees upward and outward, while the lingual occlusal part of said lower teeth are also normally horizontal, relatively narrow and the only contacting area, the occlusal buccal part sloping a few calibrated degrees downward and outward and away from the essentially horizontal upper teeth forms, so that swallowing contact and chewing trans-bolus pressures are exerted downward and inward on the usually less stable lower denture, effecting a stabilizing action thereon without lessening the stability of the opposing denture, said denture teeth approximating the width of the natural teeth and being armored by hard wear-resistant metal alloy, or porcelain-faced metal alloy, chewing surfaces with cutting blades running transversely on the occlusal chewing surfaces and having muscle-molded buccal bases with sides extended as bulges to avoid food entrapment.

3,623,226

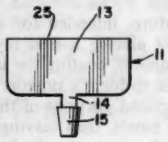
METHOD AND APPARATUS FOR INSERTING A DENTAL IMPLANT

Alfred E. Edelman, 2723 Federal St., Camden, N.J. 08105

Filed Aug. 27, 1969, Ser. No. 853,278

Int. Cl. A61c *13/00*

U.S. Cl. 32—10 A **20 Claims**



Fitting anchors called vents into the jaw bone of a person to support artificial tooth structure which includes a method of using a temporary gauge type implant to determine the proper location of the vent so that a vent for supporting a tooth will be in the most desirable position with a minimum of grinding and adjustment.

3,623,227

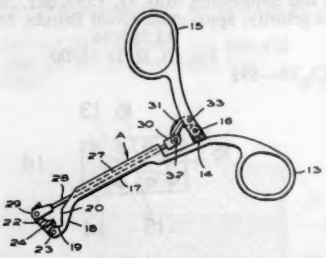
DENTAL INSTRUMENT FOR USE WITH TEETH-SPREADING WEDGES DURING FILLING OPERATIONS

Benjamin F. Tofflemire, 41301 Crest Drive, Hemet, Calif. 92343

Filed Dec. 18, 1970, Ser. No. 99,608

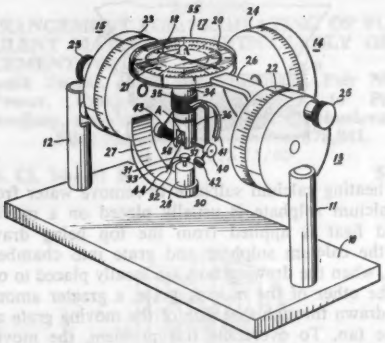
Int. Cl. A61c *3/00*

U.S. Cl. 32—64 **6 Claims**



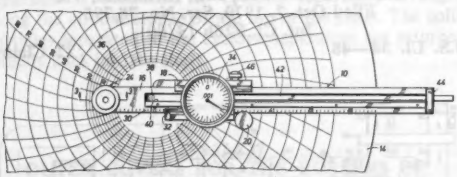
A dental instrument for use with teeth-separating wedges during filling operations of a paticnt's teeth, wherein each of the wedges has a base rectangular in cross-section with an interdental wedge portion projecting from the base, and each wedge further having a flat surface adapted to be positioned adjacent to the alveolar crest of the gingival tissues of the patient. The instrument defines a fixed jaw and a swingable jaw that are made to grip the wedge base, when the wedge is being moved into a position between adjoining teeth, or the wedge is being removed, the fixed jaw having a horizontal rest against which the flat gingival-facing surface of the wedge base is adapted to be placed, and the instrument is movable so that the horizontal rest will parallel the occlusal plane of the patient's teeth.

3,623,228
SPHERICAL TRIANGLE RESOLVER
Joseph C. Clark, 4843 Backacher Lane, Orlando, Fla. 32806
Filed Dec. 6, 1968, Ser. No. 781,909
Int. Cl. G01c 21/20
U.S. Cl. 33—1 SA 6 Claims



A spherical triangle resolving apparatus for determining a great circle course and the distance over the great circle course from an instant position to an objective position from inputs of the instant latitude, the objective latitude and the difference in longitude of the two positions. The inputs of instant latitude, objective latitude and difference in longitude each move a single shaft, which shaft is coupled to a pair of intersecting shafts in such a manner that the movement of the intersecting shafts provides outputs of the course and distance on dials that remain in a fixed plane relative to the base of the apparatus.

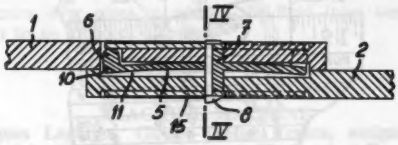
3,623,229
CHART AND INSTRUMENT CALIBRATORS
Bruce J. Caldwell, Houston, Tex., assignor to Tejas Instrument Engineers, Inc., Houston, Tex.
Filed Sept. 29, 1969, Ser. No. 863,024
Int. Cl. G01c 15/12
U.S. Cl. 33—46 R 22 Claims



One model calibrator is similar to a vernier caliper but has a male member that mates with a circular chart center hole and has an optical sight and reticle. Readings can be taken with this instrument to check either the accuracy of industrial instrument recordings or their chart imprints. In another model the calibrator is provided with a female member that fits snugly over mounting hubs of turntables associated with recorder chart drives and data processing equipment.

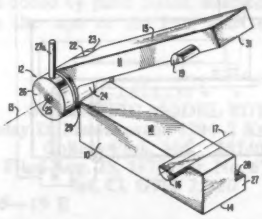
A desk model provides the capability of spot-checking of charts and calibrating instruments. It features digital readout and a carriage mechanism that can be actuated by a hand crank or servo motor. This configuration is best equipped with a light source for added illumination. It also features a magnified reticle for ease in obtaining precision measurements.

3,623,230
FOLDING MEASURING RULE
Andre Quenot, Besancon, France, assignor to Manufacture Quenot Mabo, Zone Industrielle, Trepillot, Besancon, France
Filed Nov. 24, 1969, Ser. No. 879,029
Claims priority, application France, Dec. 2, 1968, 176,221
Int. Cl. B43l 7/06
U.S. Cl. 33—118 7 Claims



In a folding measuring rule each pair of adjacent limbs is pivotally hinged by a rivet. Each such hinge includes a resilient locking element extending between the two limbs and with at least one projection out of the plane of the rule. One of the limbs of the pair has at least one depression into which said projection is engageable when the limbs are in full open or closed position, the locking element being resiliently displaceable away from the limb with depressions during pivoting of the limbs.

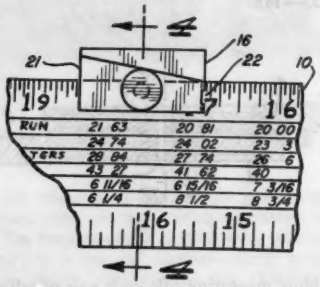
3,623,231
ANGLE GAUGE
Pliny G. Holt, 8813 Stonehaven Court, Potomac, Md. 20854
Filed July 18, 1969, Ser. No. 842,859
Int. Cl. G01b 3/30, 5/24
U.S. Cl. 33—174 3 Claims



An angle gauge for establishing an angle between two surfaces with great accuracy wherein two arms are pivotally connected for rotation about an axis that is parallel to flat base surfaces extending along one side of each arm. A reference pin of known radius protrudes from each arm parallel to the pivotal axis of the arms with the center line of each reference pin being located an accurately known distance from a radial extending perpendicularly from the pivotal axis along facing inner surfaces of the arms so that establishing the outer surfaces of the two pins into contact with the respective jaws of micro meter calipers set ot a separation calculated at twice the distance from the center line of the pins to the pivotal axis of the arms multiplied by the sine of one-half the angle

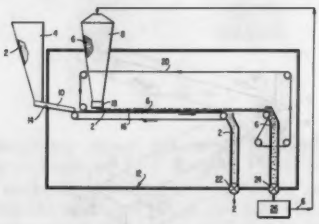
to be established plus the radius of each of the pins will align the base surfaces of the two arms to define the desired angle between them.

3,623,232
CHECK MARK RAFTER AND STAIR LAYOUT GAUGES
Julius M. Mahlstadt, Brown County, Minn.
(1211 N. Spring St., New Ulm, Minn. 56073)
Filed Jan. 26, 1970, Ser. No. 889,009
Int. Cl. B43l 7/00
U.S. Cl. 33—173 1 Claim



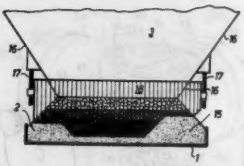
A pair of scribing accessories adjustably attachable to a carpenter's framing square for scribing of rafter layouts. Each accessory is substantially U-shaped for straddling the arms of the square, has locking means thereon, a fin and inclined shoulders.

3,623,233
METHOD AND APPARATUS FOR DRYING DAMP PULVERANT MATERIALS BY ADSORPTION
Nelson Severinghaus, 213 Glenn Circle,
Decatur, Ga. 30030
Filed Dec. 3, 1969, Ser. No. 881,743
Int. Cl. F26b 3/00
U.S. Cl. 34—9 14 Claims



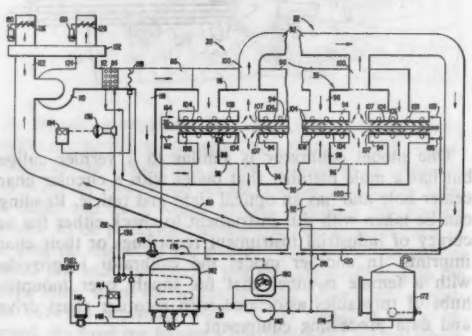
Method and apparatus for drying pulverized materials at ambient temperature wherein the method includes placing an adsorbent directly in contact with the material through a porous medium for a predetermined period of time to adsorb the water from the material and subsequently removing the water-laden adsorbent from the material. The apparatus of the invention comprises, in the first embodiment, conveying means for supporting and transporting the pulverized material, a porous medium for carrying the adsorbent in contact with the material for a predetermined length of time, and means for supplying the material to the conveying means and adsorbent to the porous medium. The second embodiment of the apparatus includes means for mixing the material with the adsorbent and means for subsequently separating the adsorbent from the material.

3,623,234
REMOVING WATER FROM CALCIUM SULPHATE
Alfons Nikolaus Knauf, Haus Heilgenborn,
Siersburg, Saar, Germany
Filed May 27, 1969, Ser. No. 828,223
Claims priority, application Germany, May 31, 1968,
P 17 71 502.5
Int. Cl. F26b 3/06
U.S. Cl. 34—25 7 Claims



When heating calcium sulphate to remove water from it, the calcium sulphate is usually placed on a moving grate and heat is applied from the top being drawn through the calcium sulphate and grate into chambers. However, when the drawing fans are locally placed to one side or the other of the moving grate, a greater amount of air is drawn through that side of the moving grate adjacent the fan. To overcome this problem, the moving grate is supplied with a smaller free cross-section per unit area adjacent the edges of the moving grate, and preferably adjacent that edge where the fan is located. Consequently, less gas can be drawn through that portion of the grate which, because of the greater pressure at that portion, tends to permit a uniform amount of gas to be drawn through the moving grate across its width. This adjusting of the free cross-section of the grate gives a rough regulation of the gas flow resistance through the calcium sulphate, and the fine regulation is afforded by providing at least two layers of calcium sulphate on the moving grate, each layer having particles of the same size but the bottom-most layer having particles smaller than each layer there above, and varying the height of the lower layer adjacent to the side of the movable grate. This variation in height gives a fine regulation of the gas-flow resistance through the calcium sulphate.

3,623,235
DRYING APPARATUS FOR VENEERS AND OTHER MATERIALS OF SHEET AND WEB FORM
Horace L. Smith, Jr., Richmond, Va., assignor to
Smitherm Industries, Inc., Richmond, Va.
Filed Oct. 7, 1970, Ser. No. 78,795
Int. Cl. F26b 13/00
U.S. Cl. 34—48 22 Claims



Apparatus for drying veneers and other materials in sheet and web form including a dryer which has a conveyor for transporting the material through a passage

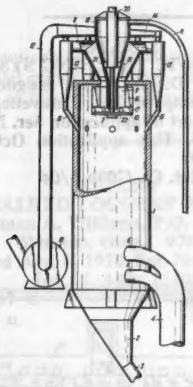
between juxtaposed radiant heat-fluid impingement units and a hold-down arrangement for pressing the material against the conveyor as the material moves through the passage. The apparatus also includes a system for supplying a heated gas and a heat transfer liquid to the radiant heating-fluid impingement units.

3,623,236

ARRANGEMENT FOR PREHEATING OF PULVERULENT MATERIAL, PARTICULARLY OF RAW CEMENT POWDER

Zdeněk Zacpal, Horni Mostenice, and Petr Němeček, Prerov, Czechoslovakia, assignors to Prerovske strojirny, narodni podnik, Prerov, Czechoslovakia

Filed Nov. 21, 1969, Ser. No. 878,841
Int. Cl. F27b *15/00*
U.S. Cl. 34—57 R **5 Claims**



A shaft heat exchanger for pulverulent material with an inlet for hot gases at the bottom and an inlet for the material to be preheated at the top is provided at the top of the shaft with a rotary shutter separator serving simultaneously as distributor of the raw material in the interior of the shaft. The gas outlet of said rotary shutter separator is connected to cyclone separators arranged along the circumference of the top of the shaft. The solid particles separated in the cyclone separators are returned directly back into the shaft.

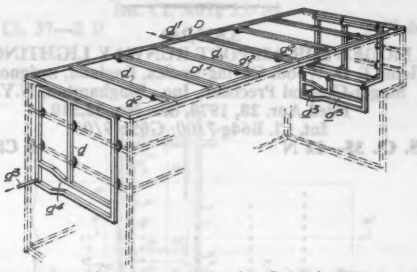
3,623,237

OUTER COVERS FOR THE ROLLERS OF MACHINES FOR THE TREATMENT OF MATERIALS IN WEB FORM

Jack D. Whittaker, St. Annes-on-Sea, Harry W. Loveday, Blackburn, Denis R. Barbour, Taunton, and William Tweedie and George S. Dryden, Hele, England, assignors to Greenbank Engineering Company Limited, Blackburn, and Easton & Johnson Limited, Taunton, England

Filed Apr. 21, 1970, Ser. No. 30,506
Claims priority, application Great Britain, Apr. 26, 1969, 21,413/69
Int. Cl. F26b *19/00*
U.S. Cl. 34—201 **4 Claims**

A machine for the treatment of material in web form with humidified air or steam constructed with a top and ends forming a frame comprising a plurality of rectangular or square frame elements welded together, each formed of a plurality of tubes for the passage of the heated fluid adjacent frame elements being connected



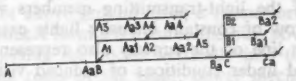
by cross over pipes to convey the fluid from one element to an adjacent element.

3,623,238

TEACHING MACHINE

Jacques Laplume, Gif-sur-Yvette, France, assignor to Societe d'Etudes Techniques et d'Enterprises Generales (SODETEG), Le Plessis-Robinson, France

Filed June 11, 1969, Ser. No. 832,290
Claims priority, application France, June 28, 1968, 157,048
Int. Cl. G09b *7/04*
U.S. Cl. 35—9 A **11 Claims**



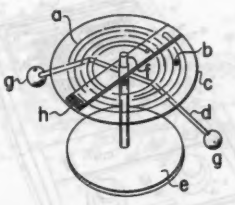
A tape recorder presents instructional items to a student, who has a keyboard; the student is asked to operate a particular key in response to a question at the end of each instruction item; if an incorrect answer is recorded by a key, a sub-instruction item including further explanation is presented to the student, the sub-instruction item being recorded on a parallel track, or in series with the main item, the sub-instruction items are skipped under control of a control unit if the key associated with the correct answer is operated. Machine instruction words to determine coincidence of key operation and correct answer are coded by pulse coded, selected frequencies recorded on the tape or the like, and selected by tank circuits.

3,623,239

SCIENTIFIC MODEL TOYS

Nikolay D. Maslokovets, 4204-2 Knox Road, College Park, Md. 20740

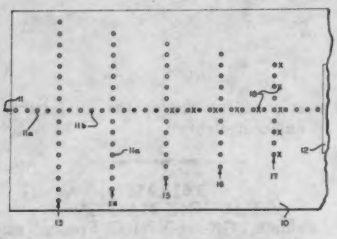
Filed Aug. 28, 1970, Ser. No. 67,741
Int. Cl. G09b *23/20*
U.S. Cl. 35—19 R **6 Claims**



The apparatus is a mechanical model of the cyclotron which may be used as a toy for amusement or as an educational toy. It serves to show the working principle of the cyclotron. The working principle of the betatron may likewise be shown by the same apparatus using a circular

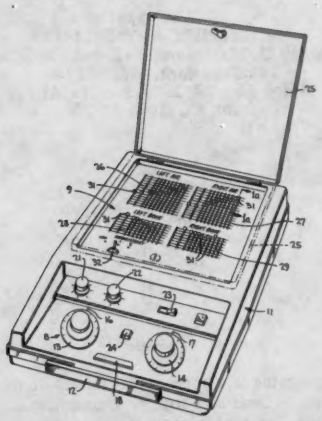
ring in place of the spiral raceway for the ball. Apparatus may serve for lectures in physics in high school, college, university or as a scientific toy or just as a toy.

3,623,240
MODEL FOR AIRPORT RUNWAY LIGHTING
Victor T. D. Wood, Goring-by-Sea, England, assignor to Singer-General Precision, Inc., Binghamton, N.Y.
Filed Apr. 28, 1970, Ser. No. 32,510
Int. Cl. B64g *7/00*; G09b *9/08*
U.S. Cl. 35—12 N **8 Claims**



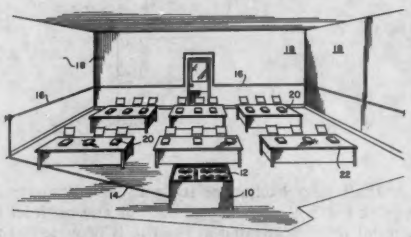
An arrangement for simulating, in reduced-scale model form, the approach lighting to an airfield runway. The problem of providing the necessary number of light-emitting members in realistic relationship, due to the greatly reduced scale of the model, is overcome by utilizing certain of the members to simulate more than one actual approach light. In the disclosed embodiment, certain of the light-transmitting members which represent the row of constant intensity lights extending from the center line of the runway also represent the strobe lights used under conditions of reduced visibility to indicate the direction of the runway center line. Means are provided for cooperatively adjusting the intensity of all the simulated lights to represent any desired level of visibility.

3,623,241
AUDIOMETER TEACHING DEVICE
Marshall A. Becker, 1007 Crest Park Drive, Silver Spring, Md. 20903; John S. Horner, 2400 Barracks Road, Charlottesville, Va. 22901; and Edward S. Stein, 5717 Nevada Ave. NW., Washington, D.C. 20015
Filed June 29, 1970, Ser. No. 50,403
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. G09b *25/02*
U.S. Cl. 35—13 **17 Claims**



In a device for training personnel to utilize audiometers, instructor programmed settings of potentiometers simulate the amplitude versus frequency hearing threshold response of a simulated subject. The responses for different frequencies are selectively fed through a switch controlled by a trainee to provide variable amplitude signals representing simulated air and bone conduction responses for both ears. Different combinations of these responses are selectively fed through a second switch controlled by the trainee to simulate different test modes. The responses of the second selector switch are fed to an electronic network having trainee responsive inputs indicative of simulated tone amplitudes and noise masking effects fed to the simulated subject. The electronic circuit is selectively responsive to an instructor-induced variable amplitude signal simulating response inconsistency of simulated subjects. These signals are combined to derive a binary signal actuating a gate feeding a lamp indicator. The gate is also responsive to a trainee actuated switch for simulating the application of a tone by the audiometer to the simulated subject. The gate and switch circuitry prevent the trainee from sweeping the frequency and amplitude response selectors.

3,623,242
ELECTRONIC TEACHING SYSTEM
Edwin L. Hoover, Dayton, Ohio, assignor to Duncan Electric Company, Inc., Lafayette, Ind.
Continuation-in-part of application Ser. No. 778,040, Nov. 22, 1968. This application Oct. 15, 1970, Ser. No. 81,090
Int. Cl. G09b *5/04*
U.S. Cl. 35—35 C **13 Claims**

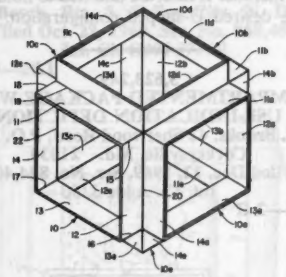


A teaching system in which there is provided an instructor's console and a plurality of student stations. The console is provided with a plurality of lesson sources which are selectively transmitted to and received by the student stations. The student stations also have means for connecting a plurality of lesson sources directly thereto. Said console and stations are also provided with means for providing an intercom link selectively actuatable for connection between said console and any one or all of said student locations whereby an instructor at said console can monitor and converse with any one or all of the students at said stations. Means are also provided at each station whereby any student can, in addition to conversing with the instructor, hear his voice projected into the system.

3,623,243
ARCHITECTURAL AND DESIGN AID
Arthur K. Hick, Mill Valley, Calif., assignor of a fractional part interest to Frederic M. Jukich, Sausalito, Calif.
Filed Aug. 12, 1970, Ser. No. 63,238
Int. Cl. A63h *33/04*
U.S. Cl. 35—72 **3 Claims**

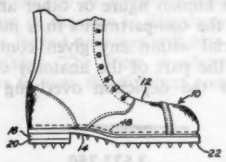
A collapsible, six-sided architectural and design aid may be manipulated to exhibit various geometric configurations. When the design aid is expanded to assume

the general shape of a parallelepiped, the sides form consecutively connected and rectangular front, first side, back and second side sections and top and bottom sections. Each section comprises first, second, third and fourth sub-



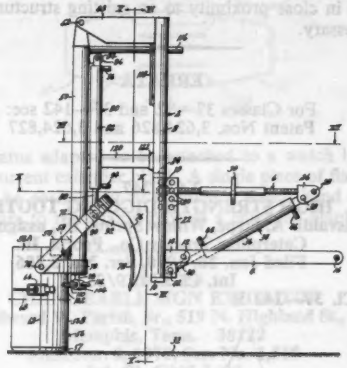
sections consecutively connected together at their side edges by parallel minor scorelines. Each section is hingedly connected to four other sections by a major scoreline at each side.

3,623,244
CALKED LOGGERS' BOOTS
Norman A. Williams, P.O. Box 215, Winston, Oreg. 97049
Filed Apr. 8, 1970, Ser. No. 26,494
Int. Cl. A43c *15/00*
U.S. Cl. 36—67 D **1 Claim**



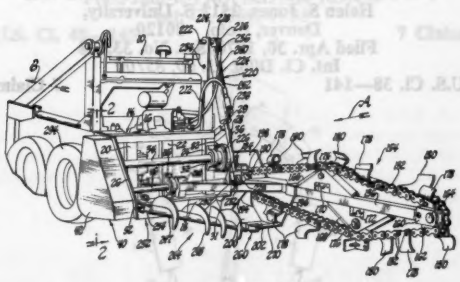
A loggers' boot is provided having thick, calkable sole members of tough sheet material such as loggers' oak leather affixed to the undersides of the heel and of the tread area of the sole of an otherwise normal boot. Each calkable member has a multiplicity of closely spaced perforations bored through it in a drill press, and contains in each perforation the body portion of a cone nut whose flange portion squarely abuts a substantial area of the inner surface of the calkable member, whose prongs penetrate the calkable member from within, and whose internally threaded body extends through, or nearly through said member. A calk of novel, one-piece construction is securely threaded in each cone nut, each calk comprising a threaded cylindrical body, a sharp inner conical tip which extends inward beyond the calkable member and penetrates the conventional sole or heel portion of the boot as the case may be, an exposed outwardly projecting, sharp conical tip, and a rigid collar of substantial thickness which surrounds the body between the threaded portion and the outer tip. The collar has flat sides adapting it to have interfitting, driven relation with the socket of a power wrench, so that the calks can be quickly, effectively and consistently driven into place by the power wrench, and can be quickly and efficiently extracted by the same means.

3,623,245
TREE BALLING MACHINE
Harold B. Adams, Sarcoxie, Mo. 64862
Filed Sept. 15, 1969, Ser. No. 858,034
Int. Cl. A01g *23/06*
U.S. Cl. 37—2 R **2 Claims**



A tree balling machine consisting of an open-bottomed, vertical cylindrical bucket diametrically split and with its sections hinged together to be closed about a small tree or other plant above ground level, a framework for supporting the bucket from a tractor or the like, power mechanism for pushing the bucket vertically into the ground to enclose the roots of the plant, power mechanism for oscillating the bucket about its vertical axis to assist its penetration into the ground, a cut-off tool adapted to be inserted horizontally into the ground beneath the bucket afer the bucket has been pushed into the ground, and power mechanism for elevating the bucket and the cut-off tool simultaneously, whereby the plant is removed from the ground with a ball of earth around its roots.

3,623,246
MOBILE TRENCH EXCAVATING APPARATUS
Roy W. Skomial, Warren, Mich. (2900 W. Wardlow, Highland, Mich. 48031), and Bert C. Van Giesen, 2514 Banner, Ferndale, Mich. 48220
Filed May 7, 1969, Ser. No. 822,493
Int. Cl. E02f *5/06*
U.S. Cl. 37—86 **7 Claims**



A trenching apparatus situated on a vehicle for mobility has a mounting frame in turn supporting a pivotal trenching or digging boom assembly which can be pivoted to varying positions including a trenching or digging position; a soil or dirt deflector operatively carried by the

frame serves to deflect the dirt, dug by the trenching boom, to one side of the resulting trench and a powered conveyor device of an auger or screw-like configuration serves to convey the deflected dirt or soil a substantial distance away from the trench in order to prevent the said dirt from falling back into the trench; the trenching boom assembly is mounted to one side of and generally outboard of the vehicle thereby enabling the digging of a trench in close proximity to an existing structure or wall if necessary.

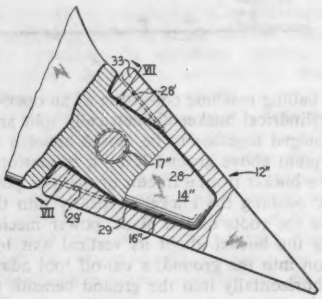
ERRATA

For Classes 37—92 and 37—142 see:
Patent Nos. 3,624,826 and 3,624,827

3,623,247
HIGH STRENGTH DIGGING TOOTH

Visvaldis A. Stepe, Willow Spring, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 26, 1970, Ser. No. 5,806
Int. Cl. E02f 9/28
U.S. Cl. 37—142 R 1 Claim

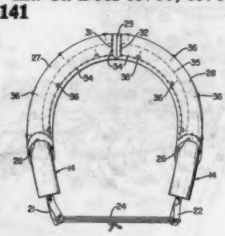


A replaceable tip of a digging tooth for earthmoving equipment or the like has a socket cavity into which a toothlike support is received, the tip being retained on the support by a transverse pin. The possibility of breakage of the tip under severe load forces is reduced by recessing central portions of the contacting surfaces of the tip or support means within the cavity thereby assuring that stresses are directed to the relatively high strength side regions of the tip.

3,623,248
FLEXIBLE FABRIC FORMER AND METHOD

Helen S. Jones, 2512 S. University, Denver, Colo. 80120

Filed Apr. 30, 1970, Ser. No. 33,338
Int. Cl. D06f 83/00, 85/00
U.S. Cl. 38—141 7 Claims

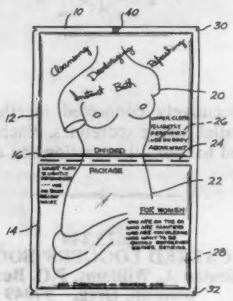


A flexible former and method for shaping collars, lapels and the like from a cut of flat fabric includes a generally cylindrical relatively firm support body comprised of an outer covering layer stuffed with a resilient particulate material, the support body being bendable in a curve along its length to a desired radius to simulate a selected neck size thereby giving a curved shape to the cut of fabric during pressing. The support body has end loops through which a tie member is inserted and tied to hold the support body in the desired U-shaped configuration.

3,623,249
COMPARTMENTED PACKAGE WITH USE-INDICATION DEPICTION

Jean P. Brooks, 42 Sherwood Road, P.O. Box 57, Cockeysville, Md. 21030

Filed Dec. 12, 1969, Ser. No. 884,402
Int. Cl. A44c 3/00
U.S. Cl. 40—2 R 10 Claims

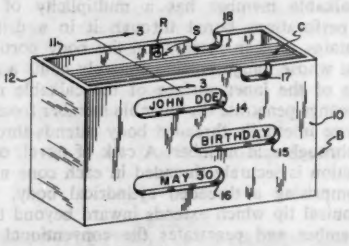


A package comprising plural compartments and having a drawing of a human figure or other anatomical depiction overlying the compartments in a manner indicating that the material within any given compartment is for application to the part of the anatomy corresponding to the portion of the depiction overlying that particular compartment.

3,623,250
REMINDER INDEX BOX

Stephen B. Misenko, 1350 E. Boston Road, Broadview Heights, Ohio 44147

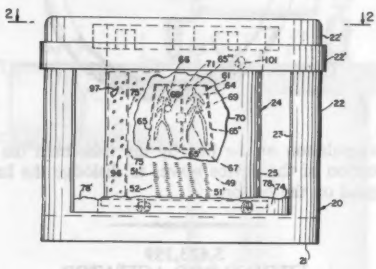
Filed Mar. 10, 1970, Ser. No. 18,107
Int. Cl. G09f 3/18
U.S. Cl. 40—16 2 Claims



In an open top rectangular card file box with a serially ordered pack of upright form cards, a dependent curved leaf spring attached to the back wall presses the stack against a front wall multiply slot-windowed to display correspondingly located notations on the face of each successively presented front card; aligned front and back wall

top edge notches and spring convexity facilitating card manipulation, especially in transferring a front card to the pack back.

3,623,251
ROTARY TOY DEVICE
James D. Bosch, Rte. 3, Valley City, N. Dak. 58072
Filed Oct. 22, 1969, Ser. No. 868,454
Int. Cl. G09f *27/00*
U.S. Cl. 40—28.1 3 Claims

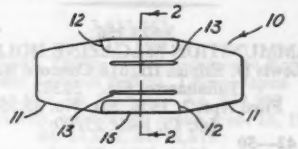


The invention comprises a rotary toy having a housing with a drum rotatably mounted in the housing. The housing has an open window area for viewing the drum. The drum is divided into sky scenes and constructed to give the outward appearance of a thunder and lightning and rain scene, a night time scene and day time scene. The thunder and lightning and rain scene has a box mounted to the side of the drum with a cotton wad surrounding the drum to give the appearance of a cloud and with electric lights in the box and jagged opening in the box to give the outline of lightning bolts, so that when one of the lights in the box is illuminated the illumination through the jagged openings will give the appearance of lightning striking. The drum is adapted to rotate to enable 6 viewers to view the different scenes.

3,623,252
RECORD FILE
Arthur Manoff, Baltimore, Md., assignor to Acme Visible Records, Inc., Crozet, Va.
Filed Nov. 10, 1969, Ser. No. 875,459
Int. Cl. B42f *17/22*
U.S. Cl. 40—104.1 2 Claims

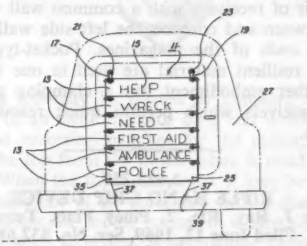
Card holder file for microfiche, the holder file being composed of cards secured in stepped arrangement with their margins bearing a dark color visible through the transparent overlying marginal index portions of the microfiche cards disposed in said holder file.

3,623,253
WATCH CALENDAR
Samuel E. Hohulin, 16 Peine Road, Lexington, Ill. 61753
Filed Nov. 5, 1969, Ser. No. 874,338
Int. Cl. G09d *3/00*
U.S. Cl. 40—107 1 Claim



Apparatus adapted to be attached to a watch band to carry a current calendar blank. A single piece of flat metal that can be easily bent to encircle a watch band has retaining ears to removably receive a calendar blank.

3,623,254
CHANGEABLE SIGN EXHIBITOR
Edward W. Parish, Sr., 519 N. Highland St., Memphis, Tenn. 38122
Filed Jan. 8, 1970, Ser. No. 1,518
Int. Cl. G09f *7/00*
U.S. Cl. 40—129 C 11 Claims



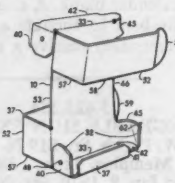
A device for supporting a plurality of interchangeable plates, each having a keyword used for constructing a communicative sentence or phrase. The device of the present invention is directed toward providing the stranded occupants of a motor vehicle in distress a way to intelligently communicate to passersby the extent and nature of the particular problem.

3,623,255
OUTDOOR SIGN SUPPORTING POST
Marcel Girard, 3872 De la Peltrie, Montreal 26, Quebec, Canada
Filed Jan. 7, 1969, Ser. No. 789,496
Int. Cl. G09f *7/18*
U.S. Cl. 40—145 7 Claims

This disclosure relates to a sign post comprising a longitudinal central portion and a side portion bent back on opposite sides of said central portion in such a way as

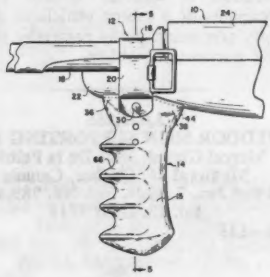
to overlap the edge of a sign blade when such a sign blade is secured to the central portion of the post. Such an arrangement permits to secure two sign blades on opposite sides of the central portion of the post at 180° intervals. A retaining member is also provided for securing an additional sign blade at 90° from the first sign blade.

3,623,256
AMMUNITION MAGAZINE HOLDER
Lewis D. Shiplee III, 818 Concord Road,
Tallahassee, Fla. 32303
Filed Apr. 3, 1970, Ser. No. 25,350
Int. Cl. F41c *25/00*
U.S. Cl. 42—50 7 Claims



A holder for a pair of box-type ammunition magazines has a pair of receivers with a common wall which is located between and contacts the left side walls of and at the base ends of the magazines. Pocket-type receivers made of resilient material are used in one embodiment and another embodiment has a clamping arrangement in the receivers which permits quick release of either magazine.

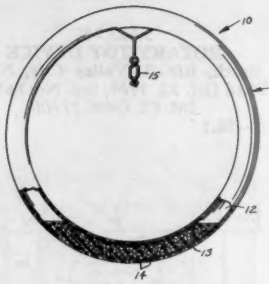
3,623,257
RIFLE HAND GRIP DEVICE
Lonnie J. Ray, Rte. 2, Piney Flats, Tenn. 37686
Filed June 12, 1969, Ser. No. 832,688
Int. Cl. F41c *23/00*
U.S. Cl. 42—71 9 Claims



A hand grip device similar to a pistol grip, having projecting means on one end adapted to fit into clamping type front band assemblies of rifles, such as employed on the M1 carbine, and adapted to be clamped thereby to secure the grip device to the rifle.

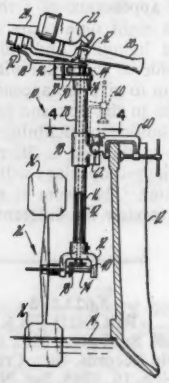
3,623,258
DEVICE FOR RETRIEVING LURES
Harold R. Doane, 1730 Franklin,
Astoria, Oreg. 97103
Filed Nov. 7, 1969, Ser. No. 874,900
Int. Cl. A01k *97/00*
U.S. Cl. 43—17.2 1 Claim

A circular device having an upper portion and a lead weighted pellet lower portion, the upper portion having a spring clip for securing the device to the fishing line in order that it may descend to the snagged lure or hook.



By manipulation of the line by the fisherman the spring clip portion of the device serves to dislodge the lure that is snagged on the bottom.

3,623,259
FISHING ROD AGITATOR
Gustav H. Rode, Ridge Road, Terryville,
Plymouth, Conn. 06782
Filed July 25, 1968, Ser. No. 747,626
Int. Cl. A01k *87/00*
U.S. Cl. 43—19.2 16 Claims

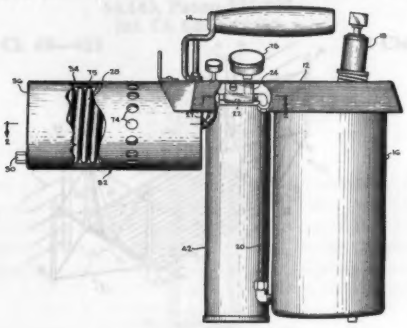


A device for agitating a fishing pole in response to the relative movement of a body of water includes a water wheel journalled at the lower end of a generally vertically disposed support member adapted for attachment to a boat or the like. The water wheel is drivingly connected to a lever pivotally mounted at the upper end of the support member and oscillates the lever in response to relative movement of the water. Clips on the lever are adapted to engage and releasably retain the handle of a fishing rod to support the rod in a conventional fishing position.

3,623,260
THERMAL INSECTICIDE FOGGER
Robert L. Konle, New Berlin, Wis., assignor to
McGraw-Edison Company, Elgin, Ill.
Filed June 26, 1970, Ser. No. 50,121
Int. Cl. A01m *13/00, 19/00*
U.S. Cl. 43—129 17 Claims

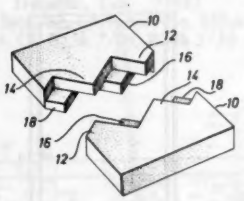
A thermal fogger having a multiple tank, liquid petroleum gas fuel supply feeding through line means to a common burner outlet for combustion within a heater body,

a source of liquid insecticide including lines means comprised of a spiral vaporizer coil located in the heater body and a fog outlet from which the insecticide is discharged as a fog, where the heater body is located next to the fuel tanks and is heat conductive to radiate heat thereagainst for stabilizing during use the liquid fuel temperature and thereby its pressure, further where the fuel combustion in the heater body occurs primarily at the fog outlet end of



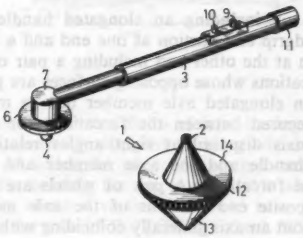
the heater body and propagates as flame in a counterflow manner to the insecticide flow over the vaporizer coil to discharge as products of combustion at the remote end of the heater body from the fog outlet, and where passage means connect the separate fuel tanks to the common burner outlet and include check means formed as part of each tank opening probe so that either fuel tank can be removed from the fogger without leakage from the other tank.

3,623,261
BUILDING UNITS WITH INTERLOCKABLE TOOTHED EDGES
Lennart W. Freese, Stockholm, Sweden, assignor to New-Invent S.A., Geneva, Switzerland
Filed July 27, 1970, Ser. No. 58,491
Claims priority, application Sweden, July 6, 1970, 9,328/70
Int. Cl. A63h *33/08*
U.S. Cl. 46—30 **9 Claims**



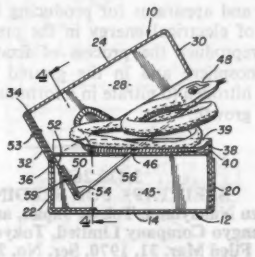
Model building units which may be readily joined together in great numbers to form continuous areas in plan or space. The units are joined edge to edge by means of an interlock-device provided along the interengaging edges. The interlock-devices comprise two rows of uniformly pitched teeth extending on either side of a common dividing plane, the teeth of one row being offset half a pitch in relation to the teeth of the second row. When the building units are pushed together to be joined, the inner side or inside of each tooth, i.e. the side lying in the common dividing plane, engages by friction and/or snap action a corresponding inside of a tooth in an opposite interlock-device, forming a firm, readily detachable joint wherein the holding forces are acting smoothly and uniformly distributed.

3,623,262
TOP TOY
Fumihiko Noda, Tokyo, Japan, assignor to Kabushiki Kaisha Kokusai Boheki, Tokyo, Japan
Filed Dec. 30, 1969, Ser. No. 889,227
Claims priority, application Japan, Feb. 18, 1969, 44/14,678, 44/14,679
Int. Cl. A03h *1/00*
U.S. Cl. 46—72 **4 Claims**



A spinning top may be started by coupling it to the output shaft of an electric motor on a rod which carries a battery and reversing switches for the motor, and by uncoupling the top from the motor when it reaches a desired speed. When the top slows down, it may be accelerated by engagement of its periphery with a disc on the motor shaft while the motor rotates in a direction opposite to the original direction. A centrifugal switch in the top energizes a lamp when the top reaches a certain speed.

3,623,263
ANIMAL SIMULATING AMUSEMENT DEVICE
John A. Frampton, 144 E. Beechwold Blvd., Columbus, Ohio 43214
Filed May 18, 1970, Ser. No. 38,258
Int. Cl. A63h *13/16*
U.S. Cl. 46—146 **1 Claim**

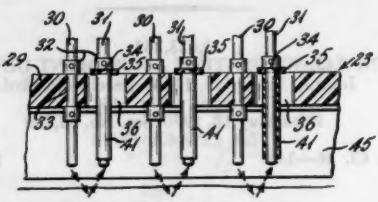


An amusement device, in the form of a gift type box, having a lower base section and an upper cover section which are pivotally connected together to form an openable container for a flexible animal-simulating body, such as a snake. A lever mechanism is connected between the cover section and the creature body to impart a life-like movement to the creature body when the cover is moved to its open position to thus surprise the unwary inquisitor.

3,623,264
PUSH TOY
Salvatore Sapienza, 171½ Garden St., Lawrence, Mass. 01840
Filed Aug. 25, 1970, Ser. No. 66,742
Int. Cl. A63h *33/02*
U.S. Cl. 46—205 10 Claims

A hand toy including an elongated handle provided with a handgrip end portion at one end and a bifurcated end portion at the other end including a pair of laterally spaced furcations whose opposing surfaces are planar and parallel. An elongated axle member has its mid-portion pivotally secured between the furcations for oscillation about an axis disposed at right angles relative to the elongated handle and the axle member and extending between the furcations. A pair of wheels are journalled on the opposite end portions of the axle member for rotation about an axis generally coinciding with the longitudinal axis of the axle member.

3,623,265
METHOD OF FIXING NITROGEN IN THE ATMOSPHERE AND THE SOIL
Don L. Brunton, Amarillo, and Charles W. Osborne, Pampa, Tex., assignors to Nitron, Inc., Pampa, Tex.
Filed Nov. 26, 1969, Ser. No. 880,068
Int. Cl. A01g *7/04*; A01c *1/00*; C01b *21/30*
U.S. Cl. 47—1.3 2 Claims

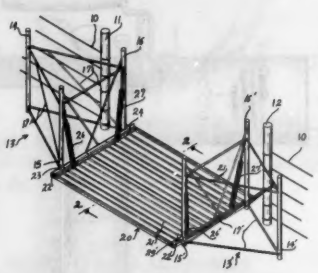


Method and apparatus for producing heat in the form of an arc of electrical energy in the presence of atmosphere to reproduce the process of fixation of nitrogen in the atmosphere and in the ground and convert atmospheric nitrogen to nitrate in a form usable by plants to encourage growth.

3,623,266
SEED TAPE FOR SEEDING
Masakazu Nakayama, Tokyo, Japan, assignor to Toei Sangyo Company Limited, Tokyo, Japan
Filed Mar. 31, 1970, Ser. No. 24,157
Int. Cl. A01c *1/04*
U.S. Cl. 47—56 2 Claims

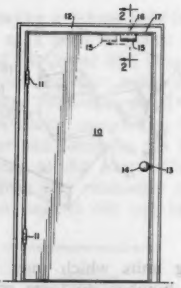
The seed tape of this invention consists of a tape being soluble or decomposed in water, in which plant seeds are wrapped at certain intervals and the outside of which is bound with at least two strings wound helically in opposite directions.

3,623,267
CATTLE GUARD
Joe Williams, P.O. Box 264, Gettysburg, S. Dak. 57442
Filed Jan. 7, 1970, Ser. No. 1,128
Int. Cl. E06b *11/00*
U.S. Cl. 49—131 3 Claims



A cattle guard mounted on the existing ground surface in an opening in a fence line is disclosed. Three post-like members connected together by cross braces are positioned on each side of the opening and a rectangular gridiron-like structure is positioned between them. A pair of post-like members are positioned closely adjacent each end of the gridiron-like structure and each is provided with a stop member securely fastened thereto a predetermined distance above the ground surface. A plurality of coil springs have their upper ends connected to the post-like members and their lower ends connected to the gridiron-like structure to yieldingly force it upwardly against the stop members.

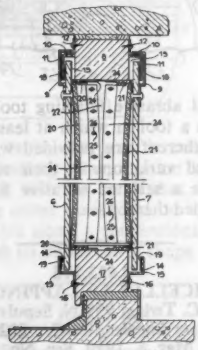
3,623,268
DOOR LOCKING DEVICE
Harry C. Zepf, 405 Mariposa Drive, Ventura, Calif. 93001
Filed Mar. 19, 1970, Ser. No. 20,894
Int. Cl. E05b *65/06*
U.S. Cl. 49—394 4 Claims



A channel-shaped lock member is slidable along the top edge of a hinged door and a pin-shaped detent projects from the door frame into a clearance space between the frame and the door. The lock member is provided with an

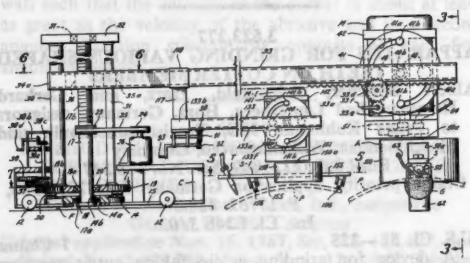
open-ended notch in which the detent is lockingly received when the lock member is slid on the door in the direction of the detent, thus holding the door in its closed position.

3,623,269
SLIDING DOOR OR WINDOW
Paul Algrain, 8 Avenue des Frenes, Kraainem, Belgium
Filed Sept. 22, 1969, Ser. No. 859,746
Claims priority, application Belgium, Sept. 27, 1968, 64,103, Patent 721,597
Int. Cl. E05d *13/02*
U.S. Cl. 49—410 **8 Claims**



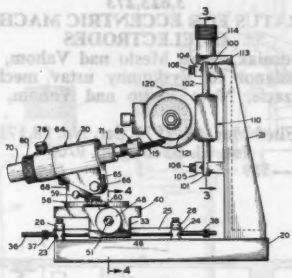
A sliding glass panel comprises a movable portion that slides horizontally in relationship with a frame and a fixed panel. The movable portion comprises a sashless glass pane which is displaceable alongside the frame and externally of the frame. Sealing strips are provided around the door opening in the frame. A handle mounted at the mid point of the sliding glass panel forces through a camming action the glass pane to take a bowed configuration that matches the configuration of the sealing strips for closing the glass panel and the open portion of the frame. The glass panel can either be a door or a window.

3,623,270
APPARATUS FOR CUTTING AND GRINDING OPENINGS IN A CURVED BODY
Amin Melhem Saab, 3737 Hillcroft, Apt. 22, Houston, Tex. 77027
Filed Sept. 22, 1969, Ser. No. 859,699
Int. Cl. B23k *7/04*; B24b *5/36*
U.S. Cl. 51—5 **11 Claims**



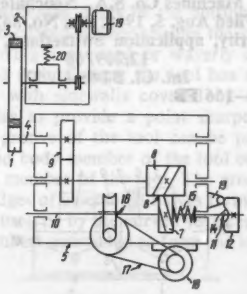
An apparatus for performing operations on pipe or vessels, particularly the cutting of openings in the pipe or vessel with a cutting torch and the grinding of the inner edge of an opening in the pipe or vessel.

3,623,271
MACHINE FOR SHARPENING TAPS
Louis W. Greenblatt, 12 Ladue Manor, St. Louis, Mo. 63124
Filed June 4, 1969, Ser. No. 830,313
Int. Cl. B24b *3/18*
U.S. Cl. 51—92 ND **5 Claims**



A device for grinding flutes of taps, having a vertically adjustable, vertically disposed grinding wheel against the periphery of which the tap to be ground can be moved. A turret for holding the tap is adjustable about a horizontal axis, about a vertical axis, and in a lateral path parallel to the axis of the grinding wheel. Within adjustable limits, the turret with the tap is movable back and forth to bring the tap into contact with the grinding wheel for the grinding action to take place at the proper angle to the tap. Graduations are provided to indicate the appropriate angularities. The machine is adjustable to operate with different sizes of taps, different shapes of grinding cuts, and different numbers of flutes.

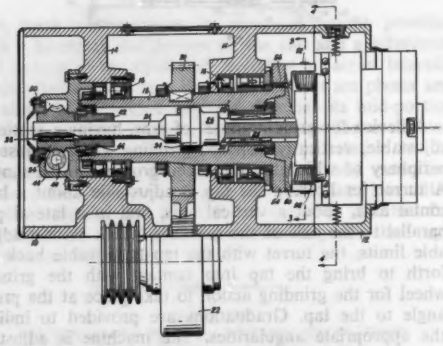
3,623,272
MACHINE FOR CLOSED-CONTOUR GRINDING OF PARTS WITH VARIABLE CURVATURE
Mark Davydovich Flid, Smirnovskaya ulitsa 4a, kv. 65, and Leonid Grigorievich Dibner, Ulitsa Menzhinskogo 9, kv. 19, both of Moscow, U.S.S.R.
Filed Aug. 14, 1969, Ser. No. 850,043
Int. Cl. B24b *5/02*
U.S. Cl. 51—105 R **8 Claims**



A workpiece of variable curvature is ground on its surface by a grinding member and the workpiece is driven at variable angular speed to provide substantially constant linear speed of the workpiece at the point of contact with the grinding member. The workpiece is driven from a first helical gear which is in mesh with a second helical

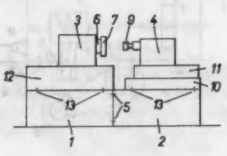
gear fixed on a spindle. The drive shaft which carries the first helical gear is driven in rotation and axially in order to provide the varying angular speed of the second helical gear to drive the workpiece in the manner previously indicated.

3,623,273
APPARATUS FOR ECCENTRIC MACHINING OF ELECTRODES
Lubomir Busniak, Nove Mesto nad Vahom, Czechoslovakia, assignor to Vyskumny ustav mechanizacie a automatizacie, Nove Mesto nad Vahom, Czechoslovakia
Filed Mar. 10, 1970, Ser. No. 18,171
Int. Cl. B24b 7/00, 9/00
U.S. Cl. 51—119 7 Claims



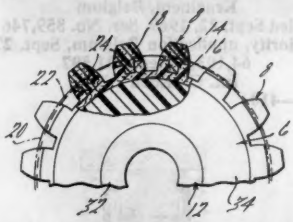
Apparatus for machining electrodes comprising a hollow spindle rotatable about a central axis, a linearly reciprocal rod mounted within the spindle, a support drivingly engaged by the spindle and a bushing mounted on the support for receiving a work tool carrier. The bushing is angularly adjustable about the support by connecting means with the rod which translates the linear motion of the rod into rotary adjustment of the bushing.

3,623,274
INTERNAL GRINDER
Bertrand Voumard, Neuchatel, Switzerland, assignor to Voumard Machines Co. S.A., Neuchatel, Switzerland
Filed Aug. 5, 1969, Ser. No. 847,658
Claims priority, application Switzerland, Aug. 14, 1968, 12,209/68
Int. Cl. B24b 41/02
U.S. Cl. 51—166 FB 8 Claims



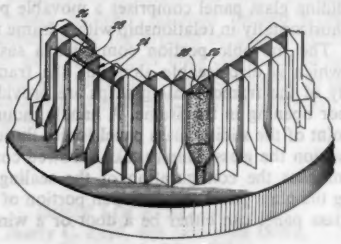
The internal grinder is composed of independent units consisting of base parts, one or more headstock spindle units, one or more grinding spindle units, and with or without a loading and unloading unit, all of which units can be put together in various combinations to construct high-precision internal grinders specifically adapted to certain kinds of operations.

3,623,275
COMPOSITE ABRASIVE FINISHING TOOL
Charles G. Koella, Rochester, Mich., assignor to Michigan Tool Company
Filed Nov. 10, 1969, Ser. No. 875,383
Int. Cl. B24d 5/14
U.S. Cl. 51—206 R 8 Claims



A gear-shaped abrasive finishing tool and the method of forming such a tool in which at least a portion of the tooth elements thereof are provided with working faces having controlled variations in their abrasive properties so as to provide a selected abrasive finishing action on gears being finished thereby.

3,623,276
MULTICELLULAR LAPPING HEAD
Willard C. Twigg, 999 N. Sepulveda Blvd., Los Angeles, Calif. 90245
Filed Mar. 5, 1970, Ser. No. 16,911
Int. Cl. B24d 5/00, 7/00, 11/00
U.S. Cl. 51—209 12 Claims

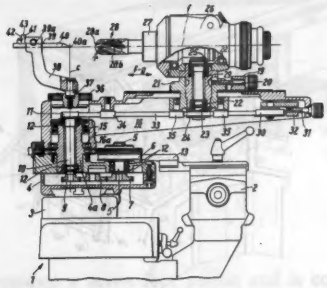


A grinding or lapping head for providing metal workpieces with specular surface finishes is disclosed. Such a lapping head includes a grinding member having a generally annular shape and a supporting or retaining base plate atop which the grinding member is mounted. The grinding member comprises a honeycomb or cellular core embedded in a rigid foam material which serves as a carrier medium for a particulate abrasive substance.

3,623,277
APPARATUS FOR GRINDING VARIOUS SHAPED TEETH ON CUTTER MEMBERS
Albert Bottcher, Scharzfeld, Harz, and Gerhard Hersener, Bad Lauterberg, Harz, Germany, assignors to Franz Kuhlmann KG, Prazisionsmechanik und Maschinenbau, Wilhelmshaven, Germany
Filed July 22, 1969, Ser. No. 843,347
Claims priority, application Germany, July 22, 1968, P 17 52 828.8
Int. Cl. B24b 3/02
U.S. Cl. 51—225 7 Claims

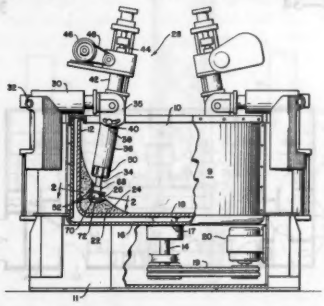
A device for grinding a die-sinking cutter member such that the cutter teeth change without interruption from a spiral arrangement on the calotte of the cutter member to a helical arrangement on the cylindrical or jacket portion of the member. An indexing head provided with a spindle for receiving the cutter member is

adjustably mounted on an arm pivotable on a conventional grinding table, the rectilinear motion of which is transmitted as rotary motion to the spindle on the indexing head through appropriate belt driven shafts. The angle of pivotal movement of the arm is adjusted by means of suitable stops, and upon rectilinear movement



of the traveling table, the arm is caused to pivot in addition to transmitting rotary motion to the spindle on the indexing head, with the result that a spherical tooth of the die-sinking cutter positioned on the spindle of the indexing head is led along a conventional grinding wheel in accordance with its initial spiral shape.

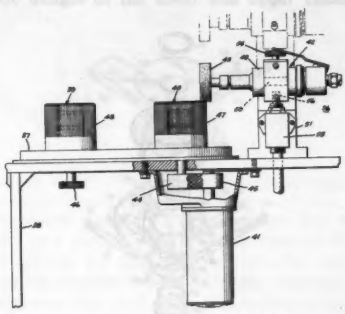
3,623,278
DEBURRING PROCESS
Herman J. Schwartz, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Dec. 3, 1969, Ser. No. 881,799
Int. Cl. B24b *1/00*
U.S. Cl. 51—317 **6 Claims**



In a mass deburring process, the integrity of a corner of a workpiece is maintained by rotating a centrifugally maintained gritty abrasive wall in a first angular direction about the workpiece and rotating the workpiece in the wall such that the velocity of the corner is about at least as great as the velocity of the abrasive and in a second angular direction substantially opposite to said first angular direction.

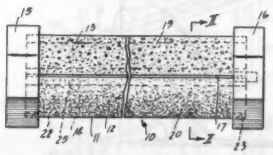
3,623,279
METHOD OF PRODUCING A BRUSH TRACK FOR AN ADJUSTABLE SLIDING BRUSH TRANSFORMER
Harry J. Proxmire, Fort Wayne, Ind., assignor to General Electric Company
Original application Nov. 16, 1967, Ser. No. 683,627, now Patent No. 3,478,290, dated Nov. 11, 1969. Divided and this application June 30, 1969, Ser. No. 853,578
Int. Cl. B24b *1/00*
U.S. Cl. 51—328 **4 Claims**

An adjustable sliding brush transformer with a relief-polished brush track. The brush track is formed of a series of convex contact surfaces on successively disposed adjacent wire turns. The series of convex contact surfaces is underspanned by a series of concave surfaces of resin insulating material along the brush track. Electrical contact between the brush and the winding is



achieved by sliding movement of the brush along the convex contact surfaces. The concave-convex brush track is produced by relief polishing a preselected portion of the winding. A polishing disc consisting of a mat of glass fibers or fibers of thermoplastic polyamide impregnated with silicon-carbide grit may be used.

3,623,280
HAND TOOL FOR SHARPENING CUTTING EDGES
William C. Chesnut, 504 Augusta St., Racine, Wis. 53402
Filed May 11, 1970, Ser. No. 35,975
Int. Cl. B24b *9/10*; B24d *15/08*
U.S. Cl. 51—370 **11 Claims**

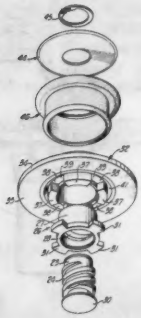


A hand tool for sharpening cutting edges characterized by a curved honing surface formed by a layer of abrasive particles for sharpening edges of the cutting device such as a knife which curved surface enables the sharpening of knife blades having a serrated or waverly cutting edge. In the preferred embodiments the tool has an elongated slot or groove with sidewalls covered by the layer of abrasive particles to provide a point sharpening device. The elongated groove of the tool can be provided as a groove in a solid body member of the tool or as a slot in a tubular body member of the tool. The groove can also be defined by edges of assembled halves forming the body member of the tool, or by the curved surfaces of a plurality of body members assembled to form the tool.

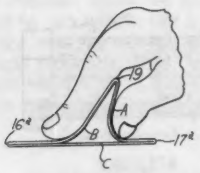
3,623,281
MOUNTING FIXTURE
Robert H. Moffat, 8554 Nevada, Canoga Park, Calif. 91304
Filed June 16, 1969, Ser. No. 833,637
Int. Cl. B24d *17/00*
U.S. Cl. 51—377 **15 Claims**

Apparatus for mounting a replaceable sanding or grinding disk on the rotary drive shaft of a power device having a supporting hub provided with annularly arranged

pockets and lugs, the pockets being adapted to receive projections on the disk, a gripping or clamping element having annularly arranged jaws being adapted to engage the projections of the disk, and means operable upon rotation of the shaft of the power device for causing the gripping or clamping means to grip or clamp the projections on the disk in order to securely mount the same on said hub.



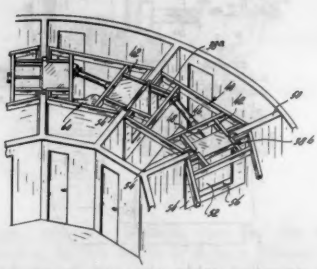
3,623,282
ARTICLE OF MANUFACTURE USEFUL FOR CONDITIONING A SURFACE
Clarence D. Norris III, P.O. Box 20222, Birmingham, Ala. 35216
Filed Feb. 24, 1970, Ser. No. 13,358
Int. Cl. B24d *15/00, 11/06*
U.S. Cl. 51—399 **4 Claims**



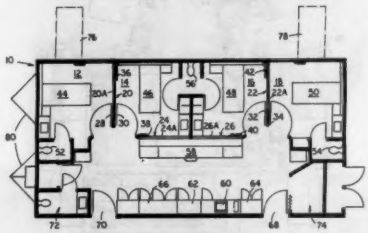
An article of manufacture useful for sanding, polishing, waxing or otherwise conditioning the surface of a work piece comprising a triangular shaped body of material, preferably in sheet form, flexible enough to be grasped between the thumb and fingers, so that the third side may be pressed into contact with the work piece. The triangular shaped body may be formed as a flat sheet or strip with structure for joining the ends at one apex of the body, together with fold or score lines thereon to provide the other two apices.

3,623,283
CEILING ENTRANCE DOOR SYSTEM FOR MULTIPHASIC MEDICAL EXAMINATION LABORATORY
John C. Abromavage, Tempe, and James F. George, Phoenix, Ariz., assignors to Advanced Management Engineering & Research Co., Phoenix, Ariz.
Filed Nov. 19, 1969, Ser. No. 878,078
Int. Cl. E04h *3/08;* **E04b** *7/16*
U.S. Cl. 52—19 **2 Claims**

A ceiling entrance door construction and system for use in multiphasic medical examinations screening laboratories of a type where a test sequence phase is conducted in a plurality of juxtaposed wedge shaped test chambers surrounding a central core area wherein each test chamber is adapted to contain all instruments and leads to perform predetermined tests with inexpensive instruments located in each test chamber, expensive equipment being centrally located in the central core and inter-connected with each test chamber via a cable, with still further expensive equipment mounted on a track above the wedge shaped test chambers adapted for selective vertical placement in or removal from each chamber, the ceiling entrance door and system being sound proof in nature and adapted for electrohydraulic opening or closing in timed sequence with movement of test equipment along the overhead track.



3,623,284
INTENSIVE CARE UNIT
Ronald K. Meyer, Mill Valley, Calif., assignor to Electro/Systems, Inc., Richmond, Calif.
Filed Aug. 15, 1969, Ser. No. 850,542
Int. Cl. A61g *12/00;* **E04h** *3/08*
U.S. Cl. 52—34 **3 Claims**

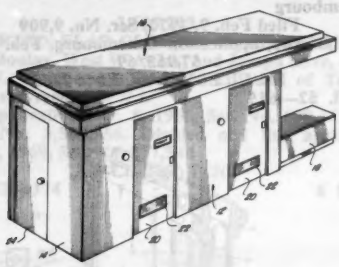


An intensive care unit has pairs of rooms set up so that a portion of the interior of one room may be viewed from a nurse station directly through a transparent portion of a wall thereof. The pair of rooms share a common wall also having a transparent portion, so that a portion of the interior of the other room may be viewed through the transparent portion of the first-mentioned wall and through the transparent portion of the common wall.

3,623,285
BUILDING CONSTRUCTION MODULE
Edward H. Kelly, Los Angeles, Calif., assignor to S.A.C. Electronics, Inc., Los Angeles, Calif.
Filed Sept. 26, 1969, Ser. No. 861,282
Int. Cl. E04h *3/02*
U.S. Cl. 52—36 **4 Claims**

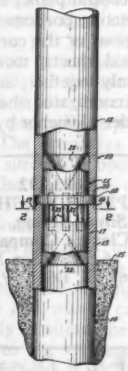
The present invention provides a building construction to be offered in the form of variously sized modules consisting of a plurality of rooms principally to be installed in airports and depots to afford a temporary sleeping or working area for rent. The principal feature of the design

of the building construction is the way in which the interior of each room is oriented so as to optimize the useful space without creating an unnecessarily large size for the overall structure. Each room consists of a bed of size sufficient



to accommodate a seven foot person and is convertible into a desk and working area complete with telephone, storage space for luggage and clothing plus suitable lighting and ventilation.

3,623,286
BREAKAWAY POST
Alfred P. Parduhn, 1924 Plymouth Lane, Oklahoma City, Okla. 73120
Filed Sept. 19, 1969, Ser. No. 859,296
Int. Cl. E01f *9/01;* **E04c** *3/32*
U.S. Cl. 52—98 **9 Claims**



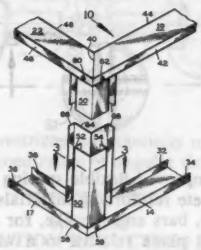
A breakaway post for delineating the presence or boundary of a hazard which post embodies a shearing member having at least a pair of breakaway pillars.

ERRATUM

For Class 52—236 see:
Patent No. 3,623,296

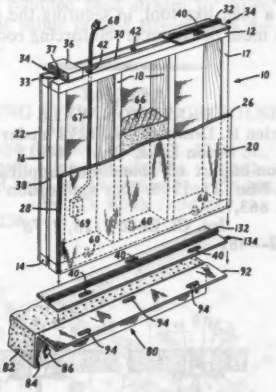
3,623,287
CORNER CONSTRUCTION FOR WALLS
Myron C. Force, North Miami, Fla., assignor to Florida Rolling Mills, Inc., Miami, Fla.
Filed Oct. 13, 1969, Ser. No. 865,724
Int. Cl. E04b *1/343, 1/348*
U.S. Cl. 52—282 **3 Claims**

A corner construction for the walls of a room or building wherein all horizontal and upright members are metal members formed from flat stock of the same size. A first pair of upwardly facing channels form a corner at floor level and a second pair of outwardly facing channels form another corner at ceiling level. These channels are adapted to receive channel-shaped studs to provide support for wall material. At the corners formed by the channels, an outer corner brace is formed by a first upright metal right angle member having inwardly turned edge flanges and secured at its bottom and top ends to the outside flanges of the lower and upper channels. A



second upright metal right angle member having outwardly turned edge flanges is secured at its lower and upper ends respectively to the inside flanges of the lower and upper channels. The right angle members serve to support wall material such as wallboard at the corners of a room, and the right angle members may be made from the same flat stock as the channels to simplify fabrication.

3,623,288
PREFABRICATED BUILDING CONSTRUCTION
Stanley L. Horowitz, 45 Park Ave. E., Merrick, N.Y. 11566
Filed July 23, 1970, Ser. No. 57,469
Int. Cl. E02d *27/00*
U.S. Cl. 52—293 **23 Claims**

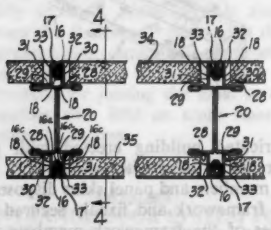


A prefabricated building erected with prefabricated wall members constructed with a framework of horizontal and vertical members and panel skins disposed at opposite sides of the framework and fixedly secured thereto. The outer surfaces of the framework members are provided with grooves in which are received the tongue parts of resilient strip members, the resilient strip members providing seals at the joints along which the respective edges of the wall members are secured to the building structure and to other wall members. The resilient strip members also serve as connecting means at the vertical seam between two adjacent wall members for connecting the wall members together without recourse to use of fastener means which extend through the vertical side edges of the wall members.

3,623,289
FLEXIBLE SPACING DEVICE FOR CONCRETE REINFORCING MATERIALS
John L. Lowery, 955 Magnolia Wood Ave., Baton Rouge, La. 70808
Filed Nov. 12, 1969, Ser. No. 875,995
Int. Cl. E04c 5/16
U.S. Cl. 52—309 9 Claims

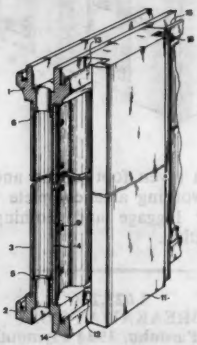
A new and improved flexible spacing device or spacer, used with concrete reinforcing materials, e.g., wire mesh, reinforcing rods, bars and the like, for spacing the latter in fixed parallel plane relative to a wall or surface on which plastic and plastic-like compositions, such as concrete, are to be poured and set to form slabs. The spacing device holds, e.g., the wire mesh or reinforcing rod, which is to be incorporated within the concrete slab, in a predetermined position outwardly from the plane formed by the wall or surface, which can be horizontal, vertical or diagonal, regular or irregular. The spacing device is constituted of an elastic or resilient material, preferably plastic, and comprises a leg, generally a cylindrically shaped portion upon a terminal end of which is provided a notched support surface for holding the wire mesh or reinforcing rods or bars. Preferably, the notched support surface is contained within an enlarged head, and thereon is provided a pair of intersecting notches, containing key slot openings at the bottom portions thereof to form lobed surfaces which interlock with the wire mesh, reinforcing rods and the like. The lower face of the enlarged head is generally flat, preferably to provide a bearing surface for use of a plier-like tool, in securing the spacing device to the wire mesh or concrete reinforcing rod.

3,623,290
PARTITION WALL
Lucien R. Downing, Jr., 1218 Yoder Blvd., Avon Lake, Ohio 44012
Continuation-in-part of abandoned application Ser. No. 535,937, Mar. 21, 1966. This application July 25, 1969, Ser. No. 863,733
Int. Cl. E04b 2/28, 2/78
U.S. Cl. 52—481 10 Claims



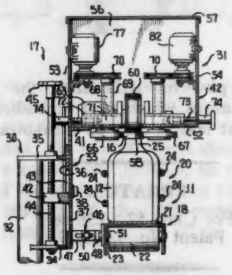
A movable partition wall employing panels which are detachably mounted on studs. The panels have parallel marginal edges along which are disposed continuous tongues with coextensive stops. The studs are provided with spaced fingers extending towards the panels. Each finger is substantially coextensive with the stud and carries a continuous shoulder for interlocking engagement with a stop when the tongues of the panels are inserted between the fingers of the studs.

3,623,291
CONSTRUCTIONAL ASSEMBLY FORMING A WALL, PARTITION AND THE LIKE
Christian Dussel, Toulouse, France, assignor to Etudes et Realisations Appliques a la Construction, de-la-Foire, Luxembourg
Filed Feb. 9, 1970, Ser. No. 9,909
Claims priority, application Luxembourg, Feb. 11, 1969, 57,965/69
Int. Cl. E04b 2/34; E04c 2/32
U.S. Cl. 52—615 9 Claims



A constructional assembly such as a wall, partition, panel and the like, comprising at least one pair of corrugated sheets arranged facing each other and symmetrically with respect to their central plane, upper and lower girder elements having projecting portions adapted to be gripped between the corrugations of the corresponding upper and lower portions of said sheets, means for clamping the corrugated sheets firmly together, and external facing elements covering said corrugated sheets and fixed on said upper and lower girder elements by hooking means.

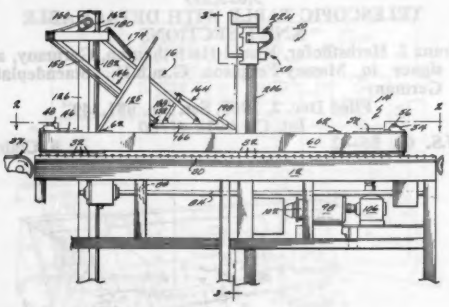
3,623,292
CAPPING MACHINE
Charles O. Barnes, Silver Spring, Md., assignor to The Eastern Cap and Closure Company, Baltimore, Md.
Filed May 16, 1969, Ser. No. 825,304
Int. Cl. B65b 7/28
U.S. Cl. 53—331.5 4 Claims



This disclosure relates to a capping machine for applying screw caps to containers. A principal feature of the capping machine is the adaptability thereof to a conventional conveyor system wherein the guide portion of the conveyor system is utilized to hold the container against rotation while the capping machine applies a cap thereto. The capping machine is mounted independently of the conveyor and is adjustable so as to align the same with the conveyor and properly vertically position the same in alignment with the container neck. The capping machine includes a capping mechanism having a plurality of cap

rotating members which are individually adjustable for the purpose of both accommodating caps of different diameters and varying the pressure engagement of the cap rotating members with caps.

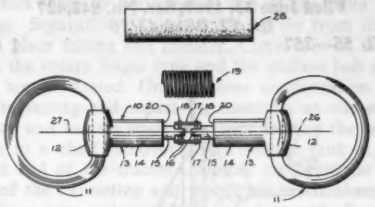
3,623,293
CARTON FLAP CLOSING MECHANISM
Henri A. Boulay, West Warwick, and Joseph Silva, Cranston, R.I., assignors to Bostitch, Division of Textron, Inc., East Greenwich, R.I.
Original application Dec. 8, 1966, Ser. No. 600,163, now Patent No. 3,502,256. Divided and this application Nov. 20, 1969, Ser. No. 877,544
Int. Cl. B65b *7/20*
U.S. Cl. 53—374 **6 Claims**



The specification discloses an apparatus for closing and stapling cartons of varying sizes of the type having a pair of end flaps and a pair of side flaps, which when opened are disposed in a coplanar relationship with respect to the side walls of the carton, the dimensions of the flaps measured in the direction of the outward extent thereof being generally equal to one-half the width of the carton. The apparatus includes means for automatically feeding successive open-topped cartons of varying size through the apparatus, during which a flap closing mechanism is operable to close the open top flaps and a staple driving means is operable to drive staples into the closed top flaps to secure them in a closed relation. The staple driving means cooperates with the conveying means for moving successive cartons through the apparatus and with a carton width sensing means to automatically position the carton in stopped relation with respect to the staple driving means in a plurality of different positions at which staples are driven, the arrangement being operable to automatically drive staples into the side flaps and the underlying end flaps only of each successive carton at positions spaced longitudinally in accordance with the width of the carton, the staples associated with each end flap being spaced apart a distance not exceeding a predetermined distance and at least one of which is within approximately one inch from the adjacent end of the carton.

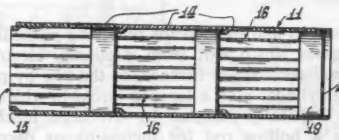
3,623,294
BITS
William Thomas Stone, Walsall, and Lascelles Arthur Lucas, Hertford, England, assignors to Matthew Harvey & Company Limited, Walsall, Stafford, England
Filed Dec. 18, 1969, Ser. No. 886,423
Claims priority, application Great Britain, Dec. 18, 1968, 60,274/68
Int. Cl. B68b *1/06*
U.S. Cl. 54—8 **13 Claims**

A bit for animals is provided with a mouth-piece having rigid end portions connected together for restricted relative angular displacement, and a resilient restoring means which urges the end members to assume a predetermined angular relationship. The relative deflection of the end



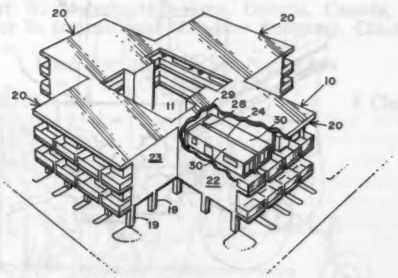
members may be restricted substantially to a single plane, or to a predetermined range of angular deflection.

3,623,295
AIR POLLUTION REDUCTION SYSTEM
Walter Shriner, 1133 S. 2nd St., Springfield, Ill. 62704
Continuation-in-part of application Ser. No. 828,080, May 2, 1969, now Patent No. 3,587,210. This application Mar. 23, 1970, Ser. No. 21,914
Int. Cl. B03c *3/30*
U.S. Cl. 55—103 **1 Claim**



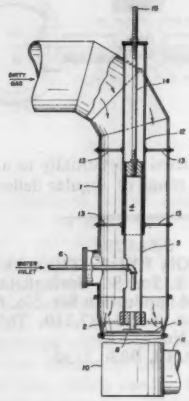
An air pollution reduction system embodying elongated dielectric means to induce electrostatic forces in the path of a polluted fluid stream to cause maximum precipitation of solids in said stream, and the collection of such solids.

3,623,296
BUILDING STRUCTURE FOR HOUSING MOBILE UNITS
Joseph Santoro, 1330 NE. 171st St., North Miami Beach, Fla. 33161
Filed Nov. 10, 1969, Ser. No. 875,286
Int. Cl. E04h *1/04*
U.S. Cl. 52—236 **2 Claims**



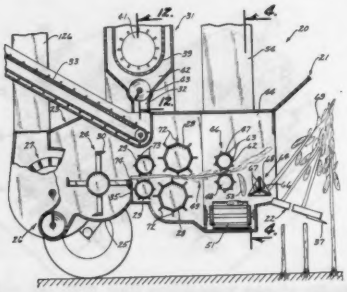
A building for housing mobile units having a plurality of spaces for the mobile units, each space accommodating two mobile units side by side with a wall positioned therebetween and a chase for utilities in the wall, and a corridor on each remaining three sides of the mobile units, a pair of rails embedded in the floor of the building engaged by slotted guide members secured beneath the mobile units fasten the mobile units in the spaces.

3,623,297
FLUE GAS SCRUBBER
Bernard B. Barefoot, 4404 Gateway Drive, Monroeville, Pa. 15146
Filed June 23, 1969, Ser. No. 842,427
Int. Cl. B01d *47/10*
U.S. Cl. 55—257 1 Claim



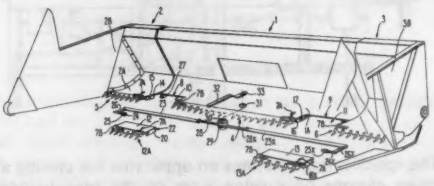
Apparatus and method for removing particulate matter from gases which exit from a cupola, electric melting furnace, basic oxygen furnace, or the like by providing a vertical cylinder with a tapered throat in which a smaller disc is vertically adjusted by overhead mechanism including a hollow rod for increasing or decreasing the cross-sectional area between the periphery of the disc and the tapered throat of the wall. Water is introduced into the hollow rod above the disc and flows downwardly and over the top of the disc surface to the periphery where it is atomized by shearing action caused by downward velocity of gas extracted by an induced draft fan. Pivotal doors may also be used in place of the disc.

3,623,298
TOTAL CORN HARVESTER MACHINE
Thomas E. Hitzhusen, Huxley, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa
Filed Feb. 12, 1970, Ser. No. 10,939
Int. Cl. A01d
U.S. Cl. 56—2 4 Claims



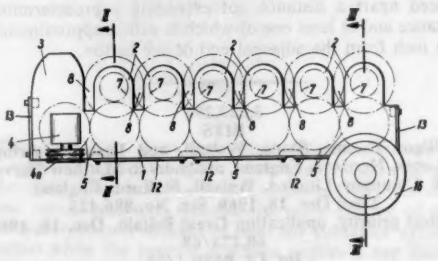
The machine operates to selectively harvest (1) the whole corn plant as ensilage (2) the whole corn ear separately from but concurrently with an ensilage comprised of the residual stalks and leaves or (3) shelled corn separately from but concurrently with an ensilage of refuse material comprised of the stalk, leaves and cobs. Cut corn plants from a front mounted row crop unit are directed butt first into a snapping unit and the picked ears conveyed for selective discharge into a wagon elevator or into a shelling unit. When the ears are harvested, the residual stalks and leaves from the snapping unit are fed into a chopping unit for delivery to a wagon discharge blower. When the picked ears are fed to the shelling unit the shelled corn is directed to the wagon elevator and the corn cobs are delivered to the chopping unit where they are chopped together with the residual stalks and leaves. By eliminating the action of the snapping unit on the corn plants, the whole corn plant including ears, stalk and leaves, is fed into the chopping unit for ensliage discharge.

3,623,299
TELESCOPIC TABLE WITH DETACHABLE KNIFE SECTIONS
Franz J. Herbsthofer, Kassel-Harleshausen, Germany, assignor to Massey-Ferguson G.m.b.H., Staendeplatz, Germany
Filed Dec. 2, 1969, Ser. No. 881,349
Int. Cl. A01d *41/00*
U.S. Cl. 56—2 8 Claims



A telescopic table has one or two end sections mounted on the main table section for movement to contracted position. The main table mounts a knife part which, in the extended position, is spaced from knife parts mounted on the end sections. Intermediate knife parts are separably mounted to the header by pin and slot arrangements to interconnect the spaced knife parts such that upon removal thereof and contraction of the header the main table and end section knife parts form a continuous knife.

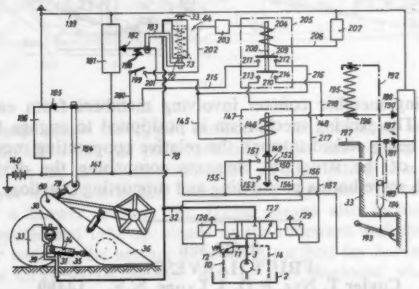
3,623,300
MOWING MACHINE
Karl-Heinz König and Antonius Hüntrup, Essen, Germany, assignors to H. Vissers N.V., Nieuw-Vennep, Netherlands
Filed Jan. 30, 1969, Ser. No. 795,296
Claims priority, application Germany, Jan. 31, 1968, P 16 32 811.3; Nov. 16, 1968, P 18 09 273.4
Int. Cl. A01d *75/30*
U.S. Cl. 56—6 5 Claims



A mowing machine adapted to be attached to a vehicle, as a tractor or the like, which comprises a carrier including cutter discs mounted thereon for rotation about a

vertical axis and to overlap each other in their operating areas. A plurality of gear wheels is disposed inside of the carrier and extends to its outer end for rotating the cutter discs, and a plurality of cutter gear wheels is provided, each meshing the corresponding of the gear wheels.

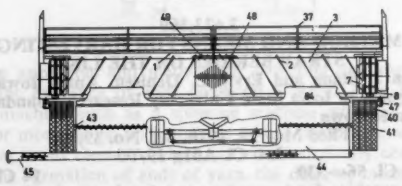
3,623,301
CONTROL APPARATUS FOR THE CUTTING PLATFORM OF A HARVESTING MACHINE
Friedrich-Wilhelm Höfer, Hofingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed July 2, 1970, Ser. No. 51,952
Claims priority, application Germany, July 23, 1969, P 19 37 346.7
Int. Cl. A01d *67/00*
U.S. Cl. 56—10.4 **13 Claims**



The level of the cutting platform of a harvesting machine on or above ground is determined by setting potentiometers to a desired pressure in the lifting motor of the platform, and to a desired position of the same. When the set pressure or platform position is different from the actual pressure or position, as represented by other potentiometers, voltage differentials are produced and compared, and a lifting motor is accordingly controlled.

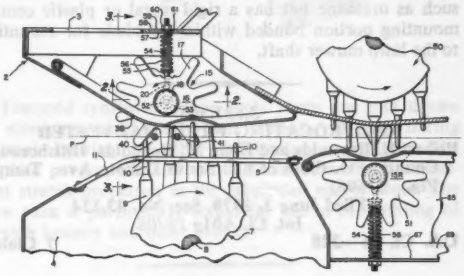
While the cutting platform rests on the ground, the lifting motor carries a selectable part of the weight of the platform. When the actual pressure in the lifting motor approaches in this position a maximum, a control switch is actuated and control means render the position representing potentiometers operative so that the maximum pressure is used for lifting and maintaining the platform above ground. The platform can be provided with ground contour feelers so that a platform level above, but near the ground, is automatically controlled in accordance with the feeler position.

3,623,302
COMBINED HARVESTER-THRESHER MECHANISM
Helwig Schmitt, 41 Ulmenweg, 344 Eschwege (Werra), Germany
Filed May 21, 1970, Ser. No. 39,396
Int. Cl. A01d *41/04*
U.S. Cl. 56—14.6 **19 Claims**



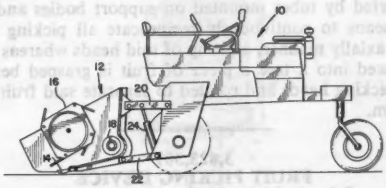
A combined harvester-thresher has a cutter bar and table carrying a threshing mechanism adjacent one end. A two-way conveyor mechanism conveys the cut crop laterally into the threshing mechanism and receives the threshed straw and residual grain after threshing and transfers them to the opposite end of the table for discharge. Separation of the residual grain from the straw takes place during this transfer. Conveyors of the auger type, the rotary finger type and the endless belt and tine type are illustrated. One machine configuration mounts the harvesting and separating assembly at one end of a tractor and has an auger conveyor feeding the separated grain to a chaff remover and a storage tank at the opposite end of the tractor. Another configuration mounts two of the harvesting and separating mechanisms end to end by a joint articulated about a fore and aft axis on a special articulated self-propelled chassis with dual engines, ground drives, chaff removing and grain storage arrangements at the outer ends of the chassis.

3,623,303
COTTON PICKER LOW BOLL LIFTER
Louis Nickla, Memphis, Tenn., assignor to International Harvester Company, Chicago, Ill.
Filed Feb. 12, 1970, Ser. No. 10,830
Int. Cl. A01d *45/18*
U.S. Cl. 56—44 **10 Claims**



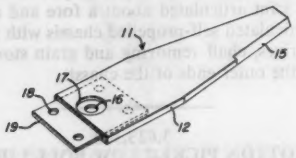
A lifter for low cotton bolls comprising a rotor with radial fingers, the rotor disposed to rotate on an upwardly and forwardly inclined axis and yieldably mounted at the compressor sheet side of the picker throat, the fingers arranged to interdigitate with the passing plants and to lift the bolls to the picker fingers on the opposite side of the throat.

3,623,304
HYDRAULIC SYSTEM FOR SUPPORTING A HARVESTER PLATFORM
Herbert W. Molzahn, Hamilton, Ontario, Canada, assignor to International Harvester Company, Chicago, Ill.
Filed Mar. 30, 1970, Ser. No. 23,646
Int. Cl. A01d *41/06*
U.S. Cl. 56—208 **5 Claims**



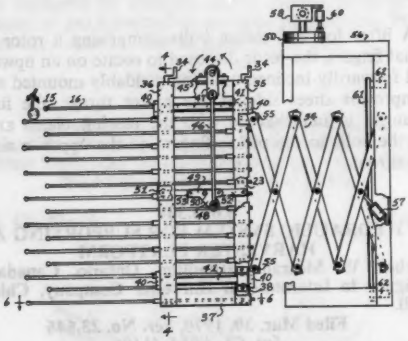
A self-propelled windrower having a wheeled frame and a harvester platform disposed forwardly of the frame for cutting and swathing a crop. The platform is movably mounted on the frame and is floatably supported by a hydraulic system enabling the platform to move upwardly and downwardly in accordance with ground undulations.

3,623,305
MOWER BLADE
Abraham L. Freedlander, Dayton, Ohio, and Robert E. Matthews and Wayne C. Garrett, Waynesville, N.C., assignors to Dayco Corporation, Dayton, Ohio
Continuation of application Ser. No. 759,825, Sept. 11, 1968, which is a continuation of application Ser. No. 625,802, Mar. 24, 1967. This application Apr. 8, 1969, Ser. No. 816,166
The portion of the term of the patent subsequent to Dec. 23, 1986, has been disclaimed
Int. Cl. A01d *55/18*
U.S. Cl. 56—295 **1 Claim**



A flexible mower blade adaptable for mounting on a power driven rotary lawn mower and designed for safety which results from the inherent flexibility of the blade. The blade is primarily formed of an elastomeric material such as urethane but has a rigid metal or plastic central mounting portion bonded within the blade for mounting to the lawn mower shaft.

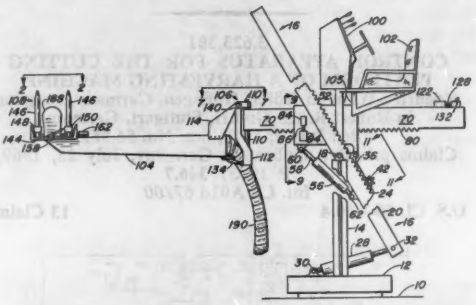
3,623,306
RECIPROCATING FRUIT HARVESTER
Robert H. Reynolds and Elmo M. Reynolds, Hillsborough County, Fla. (both of 810 South Dakota Ave., Tampa, Fla. 33606)
Filed June 3, 1970, Ser. No. 43,124
Int. Cl. A01g *19/08*
U.S. Cl. 56—328 **7 Claims**



The instant device comprises groups of picking heads supported by tubes mounted on support bodies and having means to continuously reciprocate all picking heads in an axially manner, a group of said heads whereas when advanced into a tree a piece of fruit is grasped between said picking heads and rotated to separate said fruit from its stem.

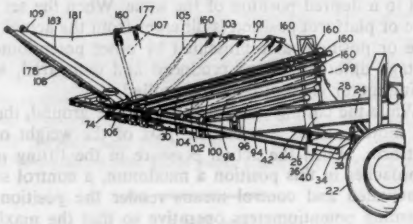
3,623,307
FRUIT PICKING DEVICE
John A. Richter, 3414 Monteen Drive, Orlando, Fla. 32806
Filed June 9, 1969, Ser. No. 831,413
Int. Cl. A01g *19/04*
U.S. Cl. 56—328 R **8 Claims**

A fruit picking device designed to simultaneously remove one or more pieces of fruit from a tree by means of a multifinger picking mechanism. A plurality of rotatably mounted fingers are mounted in parallel rows in the mechanism such that rotational motion is imparted to any piece of fruit entrapped between the rows by a three point



rotating member contact involving members from each row. The picking mechanism is positioned to engage the fruit being picked through the relative cooperating movement of the structural elements comprising the device which serve both a positioning and supporting function.

3,623,308
FRUIT HARVESTER
Cuyler T. Nye, R.D. 3, Lyons, N.Y. 14489
Filed Aug. 6, 1969, Ser. No. 847,901
Int. Cl. A01g *19/08*
U.S. Cl. 56—328 TS **9 Claims**

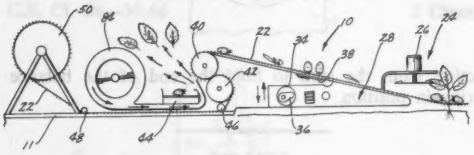


Harvester having an inclined conveyor with an end adapted to lie close to the ground and adapted to be disposed radially with respect to a tree trunk, and having flexible apron bearing arms pivoted on vertical axes on opposite sides of the lower end of the conveyor and adapted to swing from a retracted position extending along the conveyor sides, to fanned out positions around a tree trunk, and having a semi-circular flexible harvest catching apron secured to the arms on each side of the conveyor, power means to open and close the apron, and vibratory inertia tree trunk shaker means disposed beneath the conveyor, with tree trunk clamp means connected by columns extending along the opposite side of said conveyor.

3,623,309
METHOD AND MEANS FOR HARVESTING STRAWBERRIES OR THE LIKE
Elden J. Stang and Ervin L. Denisen, Ames, Iowa, assignors to Iowa State University Research Foundation, Ames, Iowa
Filed May 22, 1970, Ser. No. 39,645
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **14 Claims**

A machine for harvesting strawberries or the like comprising a tractor mounted frame means having rearward and forward ends. A rotary cutting blade means is

mounted on the forward end of the frame means for removing the leaves from the strawberry plants. The frame means includes an inclined platform means extending upwardly and rearwardly from the rotary cutting blade means which is adapted to raise previously positioned flexible netting from the ground and to cause the netting to move over the top of the platform. The platform also includes a plurality of longitudinally extending slots formed therein to permit entrance of the plant pedicels as the plants are moved rearwardly with respect to the platform. A sickle blade is positioned on the frame



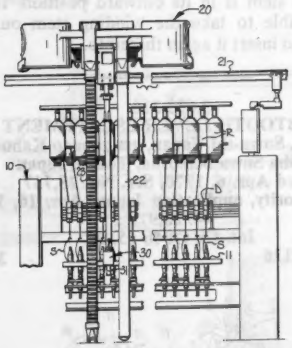
means below the upper surface of the platform and is adapted to cut the plant pedicels below the netting. The berries are conveyed rearwardly on the netting to a conveyor means with the debris being separated therefrom by a blower means. The frame means also includes a powered net take-up means at the rearward end thereof for winding the netting thereon. A method for harvesting the strawberries or the like is also disclosed wherein flexible netting is placed over the strawberry plants prior to the same emerging from the ground. The netting and the machine disclosed herein permits the strawberries to be harvested for fresh use.

3,623,310

ELECTROSTATIC CHARGE SENSITIVE ENDS DOWN DETECTING APPARATUS AND METHOD

William L. Mulligan, Charlotte, N.C., assignor to Parks-Cramer Company, Fitchburg, Mass.

Filed May 25, 1970, Ser. No. 41,136
Int. Cl. D01h *13/14, 13/16, 13/26*
U.S. Cl. 57—34 **9 Claims**



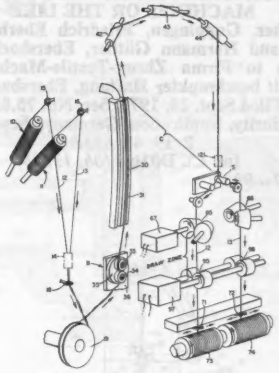
An apparatus and method for detecting and registering the existence of ends down on a textile yarn forming machine such as a spinning machine wherein a detector mounted on and movable with a traveling machine tender scans elements which are electrostatically charged by the formation of ends of yarn, the detector means being responsive to variations in electrostatic charges and sensing such charges as indicative of the absence and presence of yarns formed by the machine.

3,623,311

APPARATUS FOR PRODUCING SYNTHETIC TORQUE YARNS

Emil J. Berger, Jr., Lansdale, Pa., assignor to Turbo Machine Company, Lansdale, Pa.

Filed Nov. 3, 1969, Ser. No. 873,202
Int. Cl. D01h *13/26, 13/28;* **D02g** *3/02*
U.S. Cl. 57—34 HS **8 Claims**



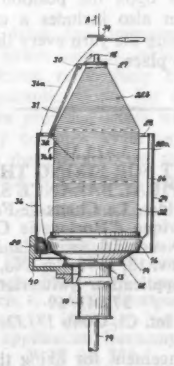
Textured synthetic torque-lively yarns are cold drawn to eliminate substantially their tendency to snarl during normal knitting or other fabricating operations. The method produces a new product characterized by excellent stretch properties in the fabricated end product. The new yarn is particularly suited for use in the knitting of stretch hosiery and other fabrics.

3,623,312

UNWINDING ARRANGEMENT FOR YARN PACKAGES

Hans Gutbrod, Ottobeuren, Germany, assignor to Hamel G.m.b.H., Zwirnerei- und Spinnereimaschinen, Munster, Westphalia, Germany

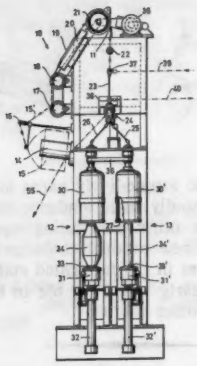
Filed Dec. 9, 1969, Ser. No. 883,458
Claims priority, application Germany, Dec. 10, 1968, P 18 13 801.7
Int. Cl. D01h *1/10, 7/86, 13/04*
U.S. Cl. 57—58.83 **5 Claims**



To unwind a thread from a yarn package, confined in a balloon-limiting stationary sleeve, with optimum space

utilization, the top of the yarn package projecting above the sleeve tapers frustoconically to define with the surrounding thread balloon a narrow channel within which the thread drawn off the package is guided to the top of a tubular spindle shaft.

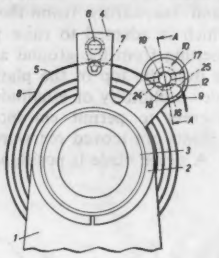
3,623,313
DEVICE FOR REDIRECTING YARN IN TWISTING MACHINES OR THE LIKE
Erich Bucher, Goppingen, Friedrich Eberbach, Albershausen, and Hermann Güttler, Ebersbach, Germany, assignors to Firma Zinser-Textile-Machinen Gesellschaft mit beschrankter Haftung, Ebersbach, Germany
Filed Sept. 28, 1970, Ser. No. 75,852
Claims priority, application Germany, Sept. 26, 1969, P 19 48 633.0
Int. Cl. D01h *1/06, 13/04*
U.S. Cl. 57—90 **14 Claims**



In a yarn twisting machine, for redirecting the advancing yarn from a fully wound spool of one winding station to an empty spool of another winding station, there is provided a yarn inlet channel, two yarn outlet channels and a movable, switch valve-type deflector member containing a yarn guide channel, one end of the yarn guide channel is coupled with the downstream end of the yarn inlet channel and the other end of the yarn guide channel is coupled with the upstream end of a selected yarn outlet channel, dependent upon the position of the deflector member. The latter also includes a cutting device for automatically severing the yarn every time a yarn switching operation takes place.

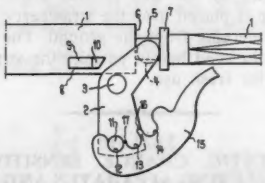
3,623,314
ARRANGEMENT FOR FIXING THE OUTER END OF A SPIRAL BALANCE SPRING
Jean-Claude Schneider, La Chaux-de-Fonds, Switzerland, assignor to Fabrique d'Horlogerie Chs. Tissot et Fils S.A., Le Locle, Neuchatel, Switzerland
Filed Nov. 13, 1970, Ser. No. 89,241
Claims priority, application Switzerland, Dec. 1, 1969, 17,843/69
Int. Cl. G04b *17/32*
U.S. Cl. 58—115 **5 Claims**

This is an arrangement for fixing the outer end of a spiral balance spring which regulates the movement of a timepiece. A stud is mounted in a support plate for adjustment by movement about its own axis. The stud is provided with a hollow passage and a pin is driven into this passage. The head of the pin and a portion of the stem adjacent the head coact with a projection of sector



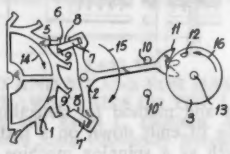
section from the stud to hold the end of the balance spring in position.

3,623,315
WATCH WITH REMOVABLE STEM
Michel Christe, Bienne, Switzerland, assignor to Omega Louis Brandt & Frere S.A., Bienne, Bern, Switzerland
Filed Oct. 27, 1970, Ser. No. 84,273
Claims priority, application Switzerland, Dec. 6, 1969, 18,162/69
Int. Cl. G04b *27/02*
U.S. Cl. 58—67 **4 Claims**



A watch having a winding stem susceptible of taking up three axial positions and a setting lever whose angular position is controlled by the winding stem. On the movement of the watch is mounted a stationary block having an inclined plane adapted to lift the setting lever and to disengage its pin from the groove of the winding stem when the said stem is in its outward position. It is thus rendered possible to take the winding stem out of the movement or to insert it again thereinto.

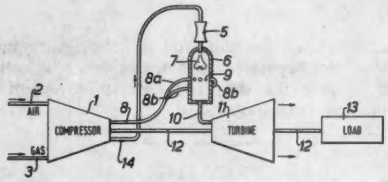
3,623,316
CLUBTOOTH LEVER ESCAPEMENT
Kenji Abe, Suwa-shi, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Apr. 6, 1970, Ser. No. 25,717
Claims priority, application Japan, Apr. 16, 1969, 44/28,972
Int. Cl. G04b *15/00*
U.S. Cl. 58—116 **3 Claims**



Clubtooth lever escapement with high transmission efficiency having an escape wheel and an anchor and satisfying at least one of $1.0 > L_G/L_{AI} \geq 0.85$ and $1.0 > L_G/L_{AD} \geq 0.85$, where L_G is the length of the impulse face of the escape wheel tooth, L_{AI} is the length

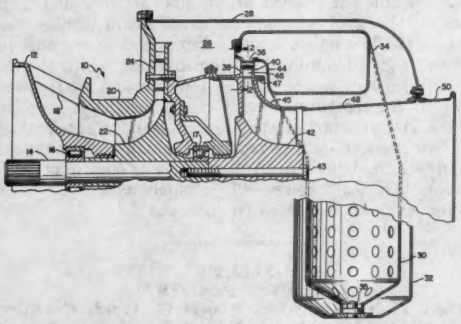
of the impulse face of the entry pallet jewel of the anchor and L_{AD} is the length of the impulse face of the exit pallet jewel of the anchor.

3,623,317
GAS TURBINE FOR LOW HEATING VALUE GAS
Richard W. Foster-Pegg, Warren, Pa., assignor to Struthers Energy Systems, Inc.
Filed June 30, 1970, Ser. No. 51,167
Claims priority, application Great Britain, July 2, 1969, 33,449/69
Int. Cl. F02c *3/06*
U.S. Cl. 60—39.46 2 Claims



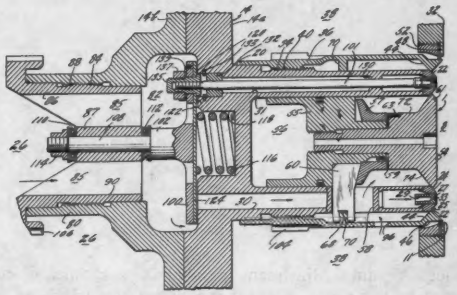
A gas turbine has a compressor, a combustion chamber, and a turbine which drives the compressor and provides additional shaft work, air and low heating value gas being introduced at given circumferentially disposed locations at the compressor intake and being withdrawn at corresponding circumferentially disposed locations at the compressor exhaust, one of said locations at the compressor exhaust providing fuel rich air introduced into and burned in the combustion chamber with additional air from the compressor introduced thereafter, products of combustion from the combustion chamber driving said turbine.

3,623,318
TURBINE NOZZLE COOLING
Wayne C. Shank, Williamsport, Pa., assignor to Avco Corporation, Williamsport, Pa.
Filed June 29, 1970, Ser. No. 50,832
Int. Cl. F02c *3/08, 7/12*
U.S. Cl. 60—39.66 13 Claims



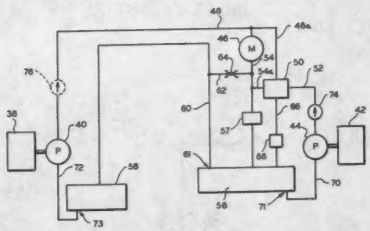
The disclosure illustrates an air-cooled turbine nozzle assembly for use with a centripetal turbine. A simplified one-piece insert baffle comprises folded sheets defining a slot at their free ends to provide impingement cooling of an opening through a series of vanes that make up the nozzle assembly. The baffle with positioning washers defines a through passage for the nozzle vanes which is so positioned that air passes through the nozzles and cools a portion of a duct connected to the turbine nozzle assembly.

3,623,319
CONTROLLABLE INJECTOR FOR ROCKETS
Raymond P. Schneider, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Feb. 20, 1967, Ser. No. 619,114
Int. Cl. F02g *1/00*
U.S. Cl. 60—39.74 6 Claims



An injector for two propellants wherein the propellants are provided with variable injection means located at the face of the injector.

3,623,320
DUAL SOURCE HYDROSTATIC DRIVE
Sammy R. Moore, Lubbock, Tex., assignor to Clark Equipment Company
Filed Feb. 9, 1970, Ser. No. 9,803
Int. Cl. F15b *15/18;* F16h *39/02*
U.S. Cl. 60—52 9 Claims

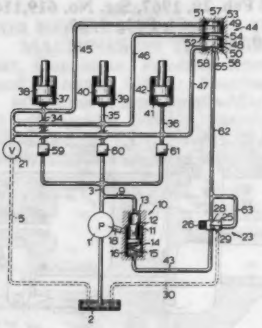


A hydrostatic drive for operating a single device jointly from two power sources, including a pair of hydraulic pumps driven respectively by the two power sources and a hydraulic motor for driving the device. Two reservoirs are provided along with a bypass valve and the necessary conduits so arranged as to provide high efficiency in the operation of the single hydraulic motor jointly by the two hydraulic pumps.

3,623,321
HYDRAULIC REGULATING ARRANGEMENT
Gunther Schwerin, Fellbach, Germany, assignor to Robert Bosch, G.m.b.H., Stuttgart, Germany
Filed Sept. 12, 1969, Ser. No. 857,395
Claims priority, application Germany, Sept. 19, 1968, P 17 28 270.1
Int. Cl. F15b *15/18*
U.S. Cl. 60—52 VS 8 Claims

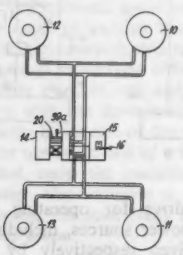
A hydraulic arrangement in which a hydraulically-operated device is connected to a pump through a regulating valve. The pump delivers fluid under pressure and

into a pressure line communicating with the regulating valve. A differential piston and cylinder has one face of the cylinder subjected to fluid pressure from the pump. The other side of the differential piston is subjected to the force of a spring and to the pressure prevailing between the regulating and the hydraulically-operated de-



vice. A pump adjustment member is mechanically coupled to the piston, so that the pump characteristics are adjusted as a function of the position of the differential piston. The differential piston assumes that position, in which the forces exerted upon the opposite sides of the piston are made equal.

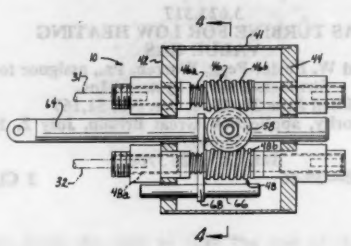
3,623,322
FLUID POWER TRANSMISSION SYSTEM
Roger Harvey Yorke Hancock, Glasgow, Scotland, assignor to National Research Development Corporation, London, SW., England
Filed Feb. 10, 1970, Ser. No. 9,677
Claims priority, application Great Britain, Feb. 11, 1969, 7,330/69
Int. Cl. F16d *31/02*
U.S. Cl. 60—53 R **13 Claims**



A fluid power transmission system comprising a rotary ball pump having two rows of balls, and means to render inoperative one of the rows of balls so as to alter the pump output, in combination with a plurality of motors drivable by the pumped fluid, and means to couple the motors selectively to the pump output.

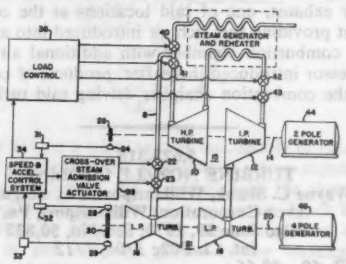
3,623,323
SPEED SYNCHRONIZING APPARATUS
Robert L. Fritz and Fred W. Newburgh, Rockford, Ill., assignors to Arrow Machining Service, Rockford, Ill.
Filed Nov. 28, 1969, Ser. No. 880,692
Int. Cl. F01b *21/00;* **F01k** *23/00*
U.S. Cl. 60—97 S **10 Claims**

Two worm shafts, each having a driving connection to an engine, are mounted parallel to a shift rod which is movable to change the speed of the slave engine. A rotatable member is mounted on the shift rod and has worm gears at either end engaged with a respective worm shaft. A friction clutch is associated with each of the worm shafts to prevent imparting of motion to the rotat-



able member when the shift rod is held against movement. A solenoid-operated lock mechanism is selectively operable to lock the shift rod against movement and render the apparatus inoperative.

3,623,324
ELECTROHYDRAULIC SPEED CONTROL SYSTEM FOR CROSS COMPOUND TURBINE POWER PLANTS
Markus A. Eggenberger, Schenectady, N.Y., assignor to General Electric Company
Filed July 15, 1969, Ser. No. 841,709
Int. Cl. F01d *13/00*
U.S. Cl. 60—102 **7 Claims**

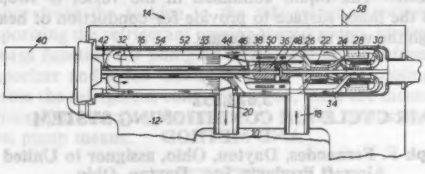


An electrohydraulic speed control system for automatically matching the speed of the low pressure and high pressure shafts of a cross compound steam turbine-generator. The low pressure unit is controlled in response to a speed signal from the high pressure unit which is used as the speed reference for the low pressure shaft speed control. An acceleration catch-up bias signal is supplied to the low pressure acceleration control for accelerating the low pressure shaft to reduce an initially existing speed difference to about zero. A preemergency control channel insures that the turbine will be safely controlled when approaching an overspeed condition.

3,623,325
POWER PLANTS
Albert Jubb, Kenilworth, Robert G. Ward, Coventry, James N. Hurst, Repton, John B. Holliday, Derby, and James W. Ashley, Dorking, England, assignors to Rolls-Royce Limited, Derby, England
Filed Oct. 13, 1968, Ser. No. 772,086
Claims priority, application Great Britain, Nov. 1, 1967, 49,638/67
Int. Cl. F01d *25/28*
U.S. Cl. 60—108 **10 Claims**

The invention relates to a closed cycle gas turbine engine power plant in which the working fluid of the gas turbine engine is heated by a nuclear reactor. The

nuclear reactor and the gas engine turbine are contained within a pressure vessel from which the gas turbine engine



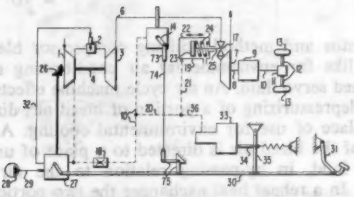
is removable, independently of the nuclear reactor, for routine servicing and the like.

3,623,326

INSTALLATION FOR THE CONTROL OF A GAS TURBINE ENGINE

Christian Greune, Schongeising, Germany, assignor to Motoren- und Turbinen-Union, Munchen G.m.b.H., Munich, Germany

Filed Dec. 3, 1969, Ser. No. 881,829
Claims priority, application Germany, Dec. 21, 1968, P 18 16 414.2
Int. Cl. F02c *3/10*
U.S. Cl. 60—39.16 **18 Claims**



An installation for controlling a gas turbine drive unit, especially for vehicles, in which the guide vanes at the inlet of the output turbine are adjusted as a function of the deviation of the hot gas temperature, downstream of the combustion chamber, from a predetermined rated value.

3,623,327

PROCESS OF GAS GENERATION WITH PROPELLANT ADDITIVE

William A. Duncan, Huntsville, Billy J. Sandlin, Athens, and James A. Murfree, Jr., Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Original application July 5, 1967, Ser. No. 651,325. Divided and this application Oct. 28, 1968, Ser. No. 772,069
Int. Cl. C06d *5/10*
U.S. Cl. 60—219 **2 Claims**

The use of O-methylhydroxylamine as an additive to exothermally decomposing monopropellants to promote the reaction with an oxidizing agent in a gas generation scheme.

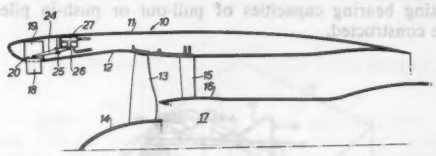
3,623,328

GAS TURBINE POWER PLANT

Malcolm Roy Pike, Nottingham, England, assignor to Rolls-Royce Limited, Derby, England

Filed Sept. 8, 1970, Ser. No. 70,103
Claims priority, application Great Britain, Sept. 26, 1969, 47,563/69
Int. Cl. F02k *11/00*
U.S. Cl. 60—226 **6 Claims**

The invention concerns a gas turbine power plant including an outer casing, an air intake adjacent the upstream end of said outer casing, and a ring of angularly spaced apart members mounted for movement between an inoperative position in which the said members are retracted into said outer casing so as not to interfere with the flow of air through the said intake, and an operative position in which the said members extend into the said intake partially to obturate the latter, but so as to permit air to flow between pairs of adjacent members, the extent of



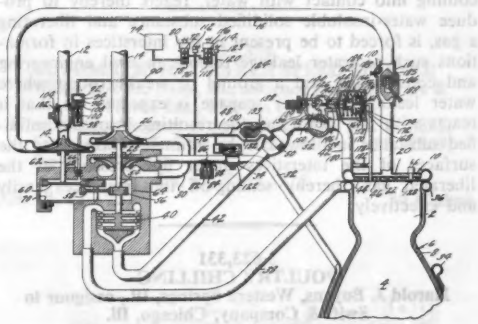
obturation by the said members ensuring that the velocity of the air flowing therebetween is increased relative to the increased velocity of the air flowing through the unobturated portion of the intake, but that it remains at a mean value below Mach 1, and powered means for effecting the said movement.

3,623,329

CONTROL SYSTEM FOR LIQUID ROCKET

Robert N. Abild, New Britain, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 12, 1960, Ser. No. 21,831
Int. Cl. F02k *3/00*
U.S. Cl. 60—243 **13 Claims**



1. In a fuel system for a rocket having an injector and a wall having cooling passages therein, a source of cryogenic fuel, a multistage pump having a low pressure stage and a high pressure stage for delivering the fuel under pressure, a conduit from the low pressure stage to the injector head, a pressure responsive valve in said conduit, a conduit from the high pressure stage to the cooling passages, a shutoff valve in said conduit, a turbine driving said pump stages and a conduit from the cooling passages to the turbine and from the turbine to the injector.

3,623,330

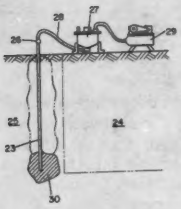
SEALING OFF FORMATION HAVING PORES IN CIVIL ENGINEERING OR ARCHITECTURAL CONSTRUCTION WORK

Saguo Nakade, Itami, and Hirosuke Kubota, Toshiyuki Oshita, and Kuniyoshi Sakane, Osaka, Japan, assignors to Kabushiki Kaisha Takenaka Komuten (or Takenaka Komuten Co., Ltd. in English), Osaka, Japan

Filed Mar. 20, 1969, Ser. No. 808,865
Claims priority, application Japan, Mar. 21, 1968, 43/18,635; July 13, 1968, 43/49,492; Nov. 16, 1968, 43/83,940
Int. Cl. E02d *3/12, 3/14*
U.S. Cl. 61—36 R **16 Claims**

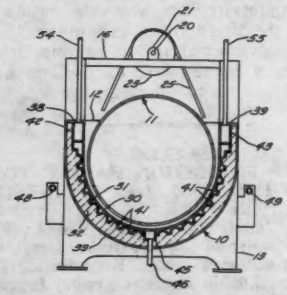
This invention relates to technique of plugging formations in civil engineering and construction, reinforced

underground structure and underground structure required for strengthening the ground thereof, which may be effectively utilized in plugging or in strengthening unstable ground in sealing-off points of water leakage or oil leakage in civil engineering and construction, in preventing gas leaks in soils or in construction, or in increasing bearing capacities of pull-out or push-in piles to be constructed.



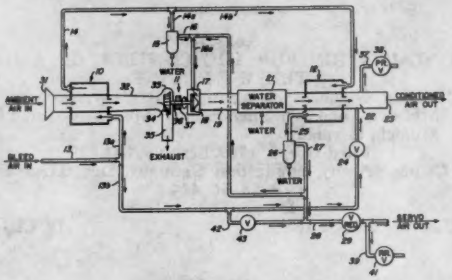
Thus, the invention is intended to provide a technique for plugging formations having interstices and a technique for compacting formations by filling interstices with a solidified substance and also provide a reinforced ground structure and an underground structure for reinforcing the ground, characterized in that a fluidal substance, such as an isocyanate compound, which upon coming into contact with water, reacts thereby to produce water-insoluble solidified substance and liberating a gas, is forced to be present in the interstices in formations such as water leakage regions in civil engineering and construction and a ground or weak ground where water leakage or water seepage is expected, so that it reacts with the water and the resulting insoluble solidified substance is allowed to be intimately bonded to the surfaces of the interstices under the pressure of the liberated gas, thereby sealing-off the interstices easily and effectively.

3,623,331
POULTRY CHILLING
Harold J. Buyens, Western Springs, Ill., assignor to Swift & Company, Chicago, Ill.
Filed Nov. 20, 1969, Ser. No. 878,270
Int. Cl. F25d *13/06*
U.S. Cl. 62—63 **9 Claims**



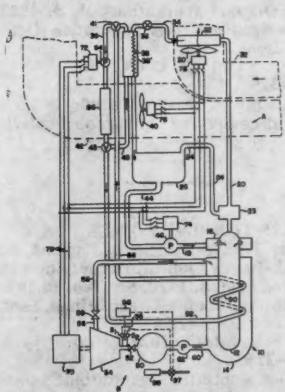
Poultry carcasses are continuously chilled in one or more troughs comprised of a plurality of vessels holding bodies of chilled liquid (water) through which the carcasses are transported. The vessels have an envelope wall construction formed of two spaced metal sheets, thereby providing passageways for fluid refrigerant which is introduced at the bottom and withdrawn from the top of the vessel. The liquid contained in the vessel is swept across the inner surface to provide for conduction of heat through the wall to the refrigerant.

3,623,332
AIR CYCLE AIR CONDITIONING SYSTEM AND METHOD
Joseph F. Fernandes, Dayton, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio
Filed Mar. 31, 1970, Ser. No. 24,118
Int. Cl. F25b *9/00*
U.S. Cl. 62—88 **5 Claims**



Apparatus and method utilizing compressor bleed air and the like for environmental air conditioning and as conditioned servo fluid. An air cycle machine effects cooling and depressurizing of a portion of bleed air, directing it to a place of use for environmental cooling. Another portion of the bleed air is directed to a place of use as a pressure fluid, in by-passing relation to the air cycle machine. In a reheat heat exchanger the two portions are brought into heat transfer relation, with consequent improvement in the relative humidity characteristics of the first portion and cooling of the second portion. Pressure reducing means provides for expansion of the said second portion and corresponding improvement in relative humidity.

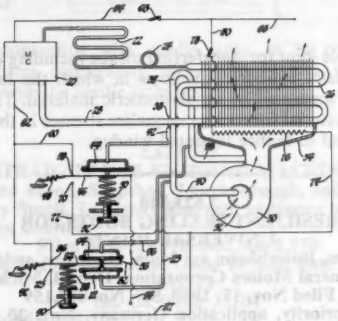
3,623,333
ABSORPTION COOLING SYSTEM
Paul F. Swenson, Jr., Shaker Heights, Ohio, assignor to Swenson Research, Inc., Bedford Heights, Ohio
Filed Sept. 22, 1969, Ser. No. 859,880
Int. Cl. F25b *15/00*
U.S. Cl. 62—104 **13 Claims**



The disclosure is directed to an absorption refrigeration cycle of the type including a refrigerant vaporizer, a condenser and an evaporator. Associated with the refrigera-

tion cycle is a power fluid vapor generator with a vapor turbine receiving power fluid vapor from the generator. Means are provided for conducting the exhaust power fluid vapor from the turbine to the refrigerant vaporizer for vaporizing the refrigerant passing therethrough. First pump means function for pumping refrigerant to the refrigerant vaporizer and a fan means serves to conduct cooling air across the refrigerant condenser. Also, there are means for drivingly connecting the turbine to the fan means and the first pump means.

3,623,334
DEFROST CONTROL RESPONSIVE TO AIR PRESSURE DIFFERENTIAL
John H. Heidorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 28, 1969, Ser. No. 880,862
Int. Cl. F25d *21/02*
U.S. Cl. 62—140 **1 Claim**

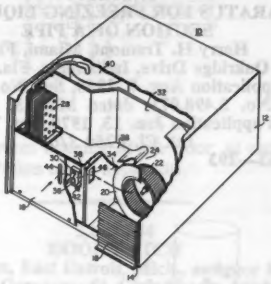


In the preferred form, a tube through which air circulates extends into heat transfer relation with the portion of the evaporator and the suction line. The accumulation of frost within the tube is proportional to the amount of frost which accumulates on the evaporator. A thermostat bulb is mounted in heat transfer relation with the outlet portion of the tube and is normally cooled by the air flow through the tube. It operates a double throw snap switch from the normal refrigerating position to defrost position when the tube reaches a predetermined higher temperature to initiate a defrosting operation. A second control responsive to the difference in pressure in the inlet and outlet portions of the air tube operates a double throw switch which may be connected in parallel with the previously mentioned switch to provide a second defrost air control which operates when the pressure differential increases to a predetermined amount to operate the double throw switch from normal refrigeration position to the defrost position.

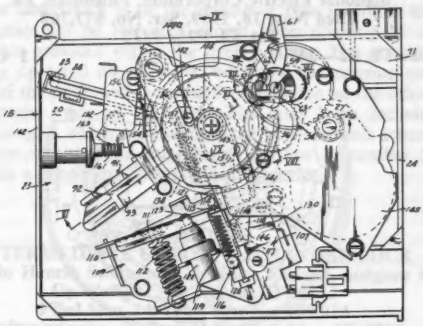
In a second form of the invention air is drawn through a tube located in heat transfer with the evaporator by the vacuum of the intake manifold of a gasoline engine. When frost restricts the air flow through the tube, a fluid motor operates a butterfly valve to restrict the flow of refrigerant out of the evaporator to raise its temperature to evaporate the frost on the evaporator and within the tube.

3,623,335
AIR CONDITIONER WITH TEMPERATURE CONTROLLING MEANS UTILIZING ASPIRATED AIR
Roger A. Shanner, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 6, 1970, Ser. No. 17,134
Int. Cl. F25d *17/00*
U.S. Cl. 62—180 **9 Claims**

The invention provides an air conditioning unit where temperature control of the unit is obtained by the use of aspirated room air moving across a thermostat that senses room temperature and from it controls the operation of the air conditioning unit. The needed aspiration of room air occurs because it is induced by the large amount of return air taken from the room, passed through the evaporator cooling coils and then returned to the room. The aspirated air also moves across the evaporator coils so that the capacity of the air conditioning unit is not reduced by a by-pass of that portion of the room air utilized for temperature sensing.



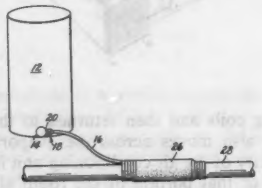
3,623,336
AUTOMATIC ICE MAKER SPEED SHIFTER
William L. Fox, Niles, Ill., assignor to Eaton Yale & Towne Inc., Morton Grove, Ill.
Continuation-in-part of application Ser. No. 762,891, Sept. 26, 1968. This application Nov. 13, 1969, Ser. No. 876,402
Int. Cl. F25c *5/16*
U.S. Cl. 62—233 **10 Claims**



A completely automatic ice cube maker which is driven through successive water fill cycles, freeze cycles and harvest cycles by a continuously operating permanent magnetic synchronous electric motor. Water is delivered to a plastic ice cube tray during the water fill cycle and the water in the tray is frozen during a freeze cycle of predetermined duration. During the harvest cycle the tray is rotated about its longitudinal axis through 360° but at approximately the mid-point of this rotation one end of the tray is arrested momentarily in its movement whereby a twisting action is applied to the tray to dislodge the cubes therefrom. The cubes drop into an ice collection

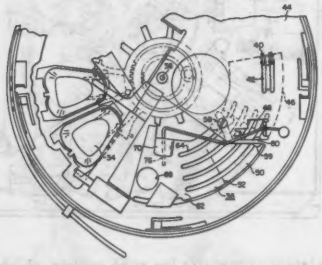
basket and prior to each harvest cycle an ice level sensing mechanism operates to determine whether an excessive quantity of cubes have been collected in the basket and if so operates to deenergize the ice cube maker until the quantity of cubes in the basket has been reduced.

3,623,337
APPARATUS FOR FREEZING LIQUID IN A SECTION OF A PIPE
Harry H. Tremont, Miami, Fla.
(501 Oakridge Drive, Indialantic, Fla. 32903)
Original application Aug. 7, 1968, Ser. No. 750,893, now Patent No. 3,498,071, dated Mar. 3, 1970. Divided and this application Jan. 13, 1970, Ser. No. 2,628
Int. Cl. F25d *3/00*
U.S. Cl. 62—293 **5 Claims**



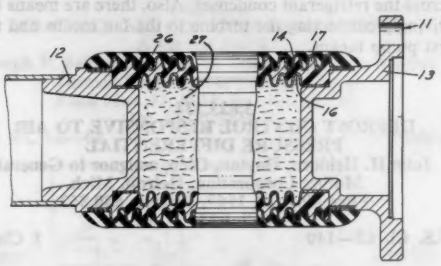
Apparatus for freezing liquid in a section of a pipe which includes a supply line leading from a container of liquified gas along a length of a pipe in which fluid is flowing and means for jacketing the supply line in sealed relation about the section of the pipe so that the liquified gas may be caused to flow through the jacket to extract heat and rapidly freeze the section of the pipe.

3,623,338
AUTOMATIC ICE MAKER WITH CUBE GUARD
Thomas B. Winters, Marysville, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 18, 1969, Ser. No. 877,760
Int. Cl. F25c *7/12*
U.S. Cl. 62—345 **1 Claim**



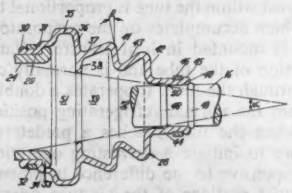
An automatic ice maker of the type having a series of individual, distortable ice pockets movable in a path including a flex station in which the pockets are distorted to loosen the ice cubes in the pockets prior to being dumped, has a cube guard provided in the flex station area and located and disposed to limit the degree to which the cubes can move away from the pockets while in the flex station, and prior to dumping of the cubes.

3,623,339
BELLOWS FLEXIBLE JOINT
George H. Muller, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 28, 1969, Ser. No. 880,525
Int. Cl. F16d *3/28*
U.S. Cl. 64—11 B **8 Claims**



A flexible joint for transferring torque including a multilayered metal cylindrical bellows in which the layers of metal are separated by an elastomeric material. The elastomeric material functions to equalize stresses in the metal bellows and to reduce torsional windup.

3,623,340
RESILIENT SEALING BOOTS FOR UNIVERSAL JOINTS
Otto Maas, Russelsheim am Main, Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 17, 1969, Ser. No. 877,159
Claims priority, application Germany, Nov. 30, 1968, G 68 09 359
Int. Cl. F16d *3/84*
U.S. Cl. 64—32 **1 Claim**

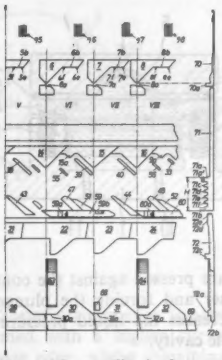


A resilient sealing boot for a universal joint in a motor vehicle drive line has at least two interconnected annular diaphragm portions forming a bellows portion of the boot, and one of these annular diaphragm portions adjacent one end of the boot has on its inner periphery an inwardly directed extension which stiffens the bellows to withstand centrifugal forces acting thereon when the joint is rotated. The extension also divides the bellows portion into two interconnected chambers and serves to retain lubricant in one of the chambers.

3,623,341
NEEDLE CONTROL ARRANGEMENT FOR A CIRCULAR KNITTING MACHINE
Richard Fetzer, Denkendorf, Germany, assignor to Firma Gottlieb Eppinger, Denkendorf, Germany
Filed Aug. 18, 1969, Ser. No. 850,944
Claims priority, application Germany, Aug. 16, 1968, P 18 85 149.9
Int. Cl. D04b *9/18, 9/38*
U.S. Cl. 66—42 **10 Claims**

Selected needles are operated by steep guide cams to move earlier to a knit position than the other needles

in order to catch, in addition to the main yarn, also an additional yarn for reinforcing the knitted fabric. The needle movements are either controlled by steep guide



cams cooperating with needle jacks, or by other steep guide cams cooperating with pattern jacks which are aligned with the needle jacks and needles.

3,623,342

STRAIGHT BAR KNITTING MACHINES

Raymond Blood, Shepshed, Loughborough, and Norman Henry Small, Leicester, England, assignors to William Cotton Limited

Filed Feb. 3, 1970, Ser. No. 8,170
Claims priority, application Great Britain, Feb. 12, 1969, 7,481/69
Int. Cl. D04b *15/64*
U.S. Cl. 66—126 **8 Claims**

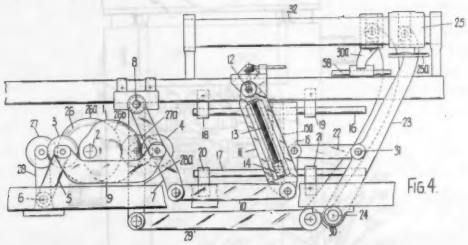


FIG 4

Straight bar knitting machine draw mechanism in which a main draw mechanism with a smaller than usual draw cam and including an auxiliary draw lever adjustable through connections to selvedge stop adjustable lead screw mechanism, is connected to a thread carrier drive bar, and an additional draw mechanism comprises an additional draw cam drive with the main draw cam, a cam follower lever, and means connecting the latter to an additional draw lever which is pivotally mounted on the main draw lever, and wherein the additional draw lever is connected to a slurcam drive bar, so that acceleration and deceleration of the thread carriers and slurcocks are governed by respective draw cams of a composite draw mechanism.

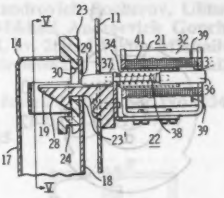
3,623,343

ELECTROMECHANICAL DOOR LOCK FOR LAUNDRY APPARATUS

Clayton L. Haller, Mansfield, Ohio, and Stephen J. Jack, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 7, 1969, Ser. No. 874,754
Int. Cl. D06f *39/14*
U.S. Cl. 68—139 **4 Claims**

Door lock structure for laundry apparatus, particularly, tumble type washing machines or conventional clothes dryers. The structure is characterized by the provision of a latch, the movement of which, is automatically blocked



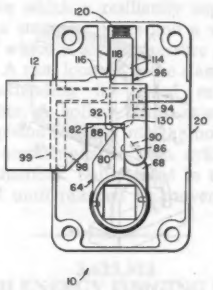
in order to prevent opening of the door, at certain times during the operation of the apparatus.

3,623,344

DOOR LATCH

George Wartian, East Detroit, Mich., assignor to Wartian Lock Company, St. Clair Shores, Mich.

Filed Nov. 20, 1969, Ser. No. 878,362
Int. Cl. E05b *65/06*
U.S. Cl. 70—134 **2 Claims**



The door latch is of the dead-bolt type in which the bolt may not be retracted except upon pivoting of an actuator provided within the latch housing. The actuator is key operated on one side, normally the exterior surface of the door, and is manually actuatable on the other, or interior, side of the door. The door latch includes a housing in which are mounted the bolt and bolt actuating components. The components are few in number to provide a simple but effective locking device.

3,623,345

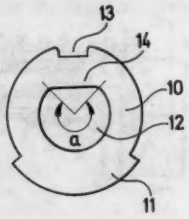
INTERMEDIATE DISK OF A CYLINDER LOCK

Kaarlo Henrik Solitanner, Helsinki, Finland, assignor to Oy Wartsila AB, Helsinki, Finland

Filed Mar. 24, 1969, Ser. No. 809,914
Claims priority, application Finland, Mar. 25, 1968, 814/68
Int. Cl. E05b *15/14, 29/08*
U.S. Cl. 70—366 **3 Claims**

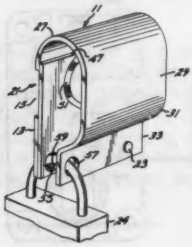
An intermediate disk for a cylinder lock comprising turnable locking disks enclosed in the cylinder of the lock and separated from each other by intermediate disks. The intermediate disks have a central opening for the key of the lock. The cross-section of the key and its turning angle are so chosen, that the cross-section of the key during the operation of the lock moves relative to the intermediate disks within a sector smaller than 360°. In the sector of the intermediate disks which is left uncovered by the cross-section of the key there is

a recess in the rim of the disks for receiving a bar shaped locking member of the lock. In the same sector the central opening of the intermediate disks has a smaller



radial extension than in the first mentioned sector in order to strengthen the portion between the recess and the central opening.

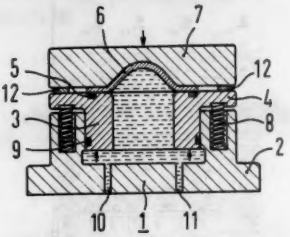
3,623,346
DOORKNOB SHROUD
Joseph Curtin, 1969 Orange Ave., Costa Mesa, Calif. 92627
Filed June 8, 1970, Ser. No. 44,366
Int. Cl. E05b *17/14*
U.S. Cl. 70—424 **5 Claims**



A doorknob shroud to be mounted on a doorknob to block unauthorized access to a keyhole. The shroud includes a housing formed with a back wall having a side opening slot therein for receipt of the doorknob shank. The housing further includes a blocking portion projecting over the keyhole to block access thereto. A retainer is pivotally mounted to the housing for being pivoted to a retaining position projecting across the open end of the slot. Locking means is provided for locking the retainer in its retaining position whereby such retainer may be opened, the housing mounted on a doorknob by passing the doorknob shank in through the open end of the slot, the retainer closed and locked in position to maintain the blocking portion disposed in blocking position over the keyhole.

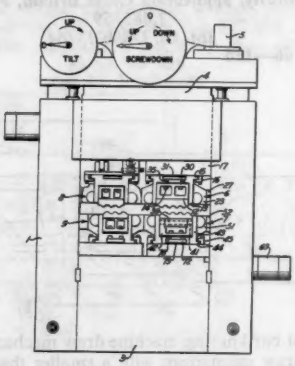
3,623,347
METHOD FOR THE HYDROMECHANICAL DRAWING OF WORKPIECES
Eugen Burk, Traunstein, Germany, assignor to Siemens-Electrogerate G.m.b.H., Berlin and Munich, Germany
Filed May 21, 1969, Ser. No. 826,465
Claims priority, application Germany, May 24, 1968, P 17 52 424.2
Int. Cl. B21d *26/04*
U.S. Cl. 72—60 **7 Claims**

Circular and other blanks of sheet metal and the like workpieces are shaped by hydromechanical drawing with the aid of a rigid container for liquid, a liquid displacing plunger of tubular shape which is movable relative to the container, and a shaping die having a cavity corresponding to the shape to be imparted to the workpiece. After filling the container with liquid up to its rim, the blank is placed on top of the plunger and the die is placed on top of the blank with the die cavity facing the blank. Then the die



and the blank are pressed against the container thus sealing the container and forcing the plunger into the container. This increases the liquid pressure and draws the blank into the die cavity.

3,623,348
ROLLER LEVELER WITH REMOVABLE ROLL UNITS
Elbert Gordon Thompson, State College, and Max F. Alters, Pleasant Gap, Pa., assignors to Sutton Engineering Company, Pittsburgh, Pa.
Filed Oct. 27, 1969, Ser. No. 869,603
Int. Cl. B21d *1/02*; B21b *31/08*
U.S. Cl. 72—165 **12 Claims**

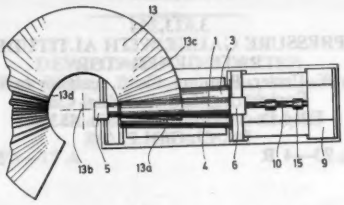


A roller leveler with front and rear frames at the opposite ends of a bed member and top beam member has a vertically spaced pair of roll units extending lengthwise between those members, at least one of which supports between it and the adjacent roll unit a plurality of spaced roll-deflecting means. The roll unit is mounted for longitudinal movement relative to the housing and deflecting means, but releasable means are provided that normally prevent that movement. When released, the roll unit can be slid lengthwise out of the housing without disturbing the deflecting means.

3,623,349
BENDING MACHINES
Christian Häusler, Bruggfeldweg 12, Aesch, Switzerland
Filed June 9, 1969, Ser. No. 831,480
Claims priority, application Switzerland, Aug. 10, 1968, 12,014/68
Int. Cl. B21d *5/14*
U.S. Cl. 72—169 **5 Claims**

A bending machine for forming a cone from a sheet having the shape of a segment of an annulus, comprising

a slide shoe at one end located between a pair of transport rolls, and a pair of bending rolls arranged one on either side of the transport rolls. The rolls are adjustable to ensure that, as the sheet is being passed through the

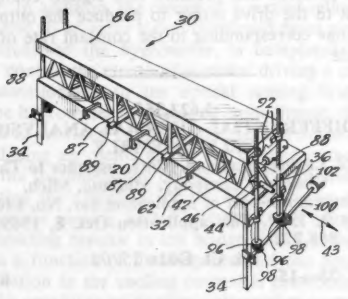


machine, the shorter arcuate edge is passed with a lower speed and formed with a higher curvature relative to the larger arcuate edge, whilst remaining at all times in tangential contact with the slide shoe.

3,623,350
SCAFFOLD STRAIGHTENING METHOD AND APPARATUS

Robert N. Hansen, 616 Wilson Road, Lombard, Ill. 60148; George T. Hempel, Rte. 1, Box 48A, Bartlett, Ill. 60103; and Raymond Noesges, 3521 Louis St., Franklin Park, Ill. 60131

Filed Feb. 2, 1970, Ser. No. 7,552
Int. Cl. B21d 3/10
U.S. Cl. 72—362 **33 Claims**

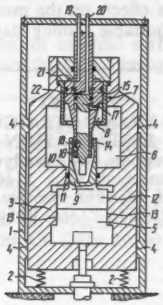


Method and apparatus for use in the refurbishing of elongate scaffolding tower sections which have become bent due to rough handling. Said tower sections are of the type having a generally triangular configuration in section and formed of a pair of elongate base frame members and an elongate apex frame member, which frame members are joined each to the other by a plurality of cross-braces. Said apparatus includes a frame having an elongate bed portion for supporting a tower section to be straightened and first and second die means operably associated with said bed portion engaging the respective frame members such that straightening forces may be applied to the bent portions thereof. In addition, this apparatus also includes means for applying an axial load to the tower section such that the respective frame members may be placed in tension during the application of straightening forces thereto by said die means.

3,623,351
HIGH-SPEED HAMMER

Iosif Lvovich Makhtjuk, Prospekt Truda 60, kv. 11; Petr Pavlovich Matviets, Ulitsa Fr. Engelsa 70, kv. 24; Igor Vasilievich Fomichev, Ulitsa Koltsovskaya 82, kv. 6; Anatoly Alexandrovich Bocherov, Ulitsa Koltsovskaya 82, kv. 48; Mikhail Andreevich Goncharenko, Ulitsa Kardashova 2, kv. 2; and Viktor Mikhailovich Novikov, Ulitsa Peshestreletskaya 125, kv. 76, all of Voronezh, U.S.S.R.

Filed June 20, 1969, Ser. No. 834,965
Int. Cl. B21j 7/24
U.S. Cl. 72—445 **3 Claims**

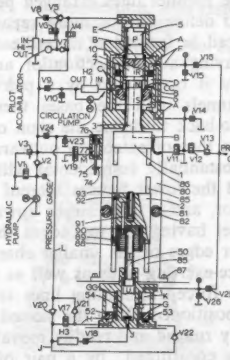


A hammer in which a resiliently supported frame is provided with a stamping space and a working chamber in the latter of which is a high pressure gas serving as an energy carrier. A ram located in the stamping space has a hollow rod extending in sealed relation into the working chamber. A hollow piston extends into the rod and a further piston extends into the hollow piston, both pistons being accommodated in a cylinder coupled to said working chamber. Balls seated in the hollow piston engage the rod until released by movement of said further piston.

3,623,352
HIGH ENERGY FORGING PRESS

Kurt H. Kramer, 601 West Ave., Sewaren, N.J. 07077

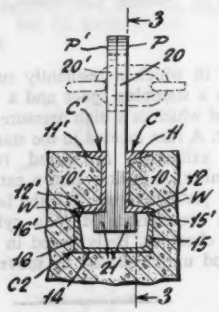
Filed Dec. 18, 1969, Ser. No. 886,130
Int. Cl. B21j 9/12
U.S. Cl. 72—453 **27 Claims**



The machine disclosed herein is known as a high velocity impact forming machine. It is provided with two tooling or anvil members and associated equipment assembled in such manner that no multiple pounding or restrike results as the machine is used. The machine has adjusting means for adjusting the energy output from stroke-to-stroke, thus enabling the user to use a sequence of

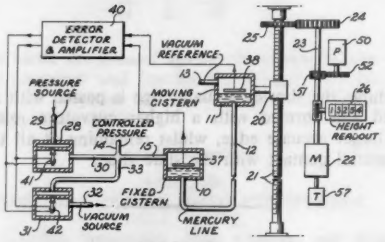
varying energy forming steps such as breaking scale in hot work, preforming, and blocking. Means is provided by which the tooling is separated immediately after forming so that handling of the formed parts can commence immediately and without pause. Operation cycle time is thus used most efficiently. The structure of the machine is such that relatively low and fully controllable foundation loadings result. The machine can be provided with sufficient die area to accommodate multiple cavity tooling and is provided with means to sustain eccentric loadings from off center work. The machine is capable of stroking when the tooling and workpiece are absent without any deleterious effects on the machine. The machine has completely adjustable tooling daylight from stroke-to-stroke.

3,623,353
VEHICLE FRAME STRAIGHTENING INSTALLATION
David Dinerman, 304 Brandywine Road, Savannah, Ga. 31405
Filed Oct. 14, 1968, Ser. No. 767,223
Int. Cl. B21d *37/10*; B21j *13/04*
U.S. Cl. 72—456 **8 Claims**



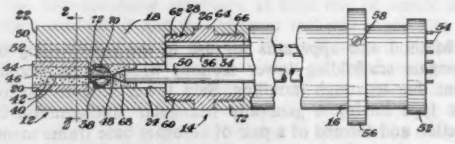
An installation for repairing damaged automotive vehicle bodies and frames comprising a concrete floor having a plurality of slotted anchor-rails embedded therein flush with the surface of the floor and displaced from each other along parallel lines arranged perpendicularly to each other to define one or more repair bays. Each slotted anchor rail is formed of metallic channeling to define a slot having a cross-section of an inverted T, which preferably is constituted by a pair of C-shaped rolled steel channels with the bases thereof disposed vertically back-to-back to define the stem of the T, with the upper flanges thereof extending outwardly in a horizontal plane substantially coincidental with the surface of the floor and the lower flanges thereof embedded in the concrete floor, and a third larger upwardly directed C-shaped channel having the top edges thereof welded to the free lower edges of the smaller channels. Anchor elements of force-exerting units as well as anchor members for flexible force-transmitting lines are adapted to be moved and positioned along the slotted anchor rails, and an especially rugged and readily movable anchoring member may be constituted by a pair of congruously disposed L-shaped plates adapted to be moved within the slotted rail, individually or in unison. Each plate may be formed of an apertured upright portion adapted to be selectively juxtaposed with the adjacent upright portion to define an aligned anchoring aperture near the top thereof, and a lateral flange extending outwardly from the lower end of said upright portion to engage the anchor rail at the top of the base and at the opposite sides of the vertical stem of the T-slot, when the plates are juxtaposed, but which may be disengaged from the slotted rail when the plates are longitudinally displaced from each other.

3,623,354
PRESSURE GAUGE WITH ALTITUDE RATE GENERATOR
Joseph W. Carter, Pomona, Calif., assignor to Schwien Engineering, Inc., Pomona, Calif.
Filed Dec. 10, 1969, Ser. No. 883,860
Int. Cl. G01l *27/00*
U.S. Cl. 73—4 R **5 Claims**



A pressure controller incorporating a pressure gauge such as a manometer or Bourdon tube and providing an output pressure corresponding to altitude. Apparatus for generating pressure change to represent a constant rate of change of altitude. A controller for the altitude or pressure drive motor including a potentiometer driven by the motor to provide a signal proportional to pressure and a tachometer driven by the motor to provide a velocity feedback signal proportional to pressure rate, with the pressure and pressure rate signals combined as the input to the drive motor to produce the output pressure change corresponding to the constant rate of change of altitude.

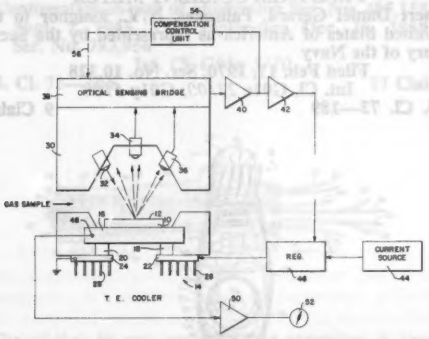
3,623,355
DIFFERENTIAL THERMAL ANALYSIS CELL ASSEMBLY
Horst G. Langer, Wayland, Mass., assignor to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of application Ser. No. 840,281, July 9, 1969. This application Oct. 8, 1969, Ser. No. 868,272
Int. Cl. G01n *25/00*
U.S. Cl. 73—15 **6 Claims**



This invention relates to a thermal analysis cell which is capable of supplying meaningful data in a high vacuum which is particularly useful for operations within a mass spectrometer or similar instrument which allows the heating of samples within the confinement of the mass spectrometer. The cell comprises a silver block to guarantee uniform heat throughout the cell. It is insulated against the push-through shaft by a section of boron nitride which is an excellent thermal insulator. The sample is loaded into a glass or metal capillary and pushed into a well in

the end of the silver block and onto a needle which is coupled to a temperature sensor. Means are provided for developing an electrical signal for reference and cell heating furnace control purposes.

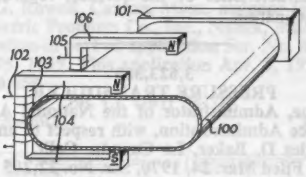
3,623,356
DEW POINT HYGROMETER
Arthur Bisberg, Lexington, Mass., assignor to EG & G, Inc., Bedford, Mass.
Filed Dec. 18, 1969, Ser. No. 886,220
Int. Cl. G01n *25/02*
U.S. Cl. 73—17 A **14 Claims**



A dew point hygrometer includes means for automatically compensating for the build-up of contaminants on the reflective surface of the hygrometer mirror. In a first embodiment, the hygrometer is periodically compensated under the control of a timing motor which energizes a relay for interrupting the cooling current servo loop and for providing an offset to the bridge circuit of the hygrometer. In addition, the circuit of a second relay, which is responsive to an error signal developed from across the bridge circuit of the hygrometer, is completed so that this may control the circuit of a motor driving a compensating potentiometer in the optical sensing bridge circuit of the hygrometer. In a second embodiment, the compensation is provided continuously. This is accomplished by introducing an oscillation to the cooling current supplied to the thermoelectric cooler of the hygrometer and by detecting the amplitude of the oscillation as detected by the optical sensing bridge circuit of the hygrometer. A compensating resistor in the bridge circuit is then controlled as a function of the magnitude of this amplitude. The oscillation in the cooling current is provided, in one version, by providing an auxiliary alternating current generator which provides an oscillatory current which is added to the cooling current. In a second version, the cooling current servo loop is designed to be self-oscillatory, providing the aforementioned oscillation in the cooling current.

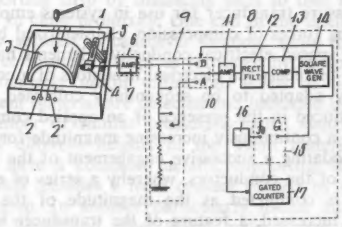
3,623,357
APPARATUS FOR MEASURING THE DENSITIES OF FLUIDS
William Edward Abbotts, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England
Original application Jan. 25, 1967, Ser. No. 611,632, now Patent No. 3,516,283, dated June 23, 1970. Divided and this application Jan. 28, 1970, Ser. No. 888,101
Claims priority, application Great Britain, Jan. 28, 1966, 4,042/66
Int. Cl. G01n *9/00*
U.S. Cl. 73—32 **5 Claims**

A density meter for measuring the density of a gas, having a hollow cylinder which is set into bell-like vibration when the gas is in contact with the cylinder both internally and externally to avoid differential pressure, or the cylinder walls are so thick that a gas or liquid can be



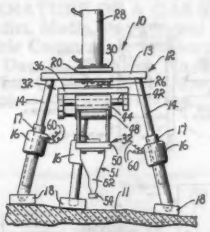
applied to an internal or external surface alone, in each case the predeominant frequency being measured.

3,623,358
METHOD OF NON-DESTRUCTIVE EXAMINATION OF SPECIMENS
Koichi Sugimoto, Osaka, Japan, assignor to Iwatani & Co., Ltd., Osaka, Japan
Filed Feb. 20, 1970, Ser. No. 13,038
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.2 **5 Claims**



The resonant frequency and the damping factor of a specimen have been used to examine the contents and structural condition of a specimen, by a method of detecting and counting the number of oscillations occurring during selected time intervals during the attenuation of the oscillations.

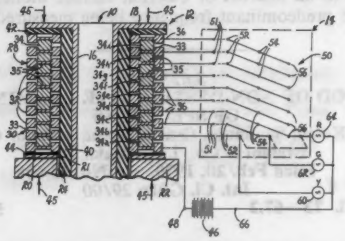
3,623,359
PENETROMETER
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Isak Kloc, Pasadena, Calif.
Filed Jan. 19, 1970, Ser. No. 3,654
Int. Cl. G01n *3/42*
U.S. Cl. 73—84 **7 Claims**



A penetrometer particularly suited for use in empirically determining the load-bearing characteristics of a load-bearing surface inclined with respect to a horizontal plane, characterized by a penetrometer mount rotatably supporting a vertically driven probe, a feature of the invention being the provision means supporting the probe for simultaneous displacement in both vertical and lateral directions, whereby the extent of resulting lateral displacement imposed on the probe, as vertical displacement

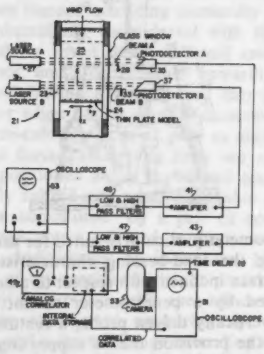
operatively is imparted thereto, can be detected and measured for purposes of accurately indicating the true load-bearing characteristics of the surface, regardless of its angle of inclination.

3,623,360
PRESSURE TRANSDUCER
T. O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Charles D. Baker, La Canada, Calif.
Filed Mar. 24, 1970, Ser. No. 22,265
Int. Cl. G01l *1/04*
U.S. Cl. 73—141 A **14 Claims**



A pressure transducer for use in systems employed in measuring forces of compression, characterized by a plurality of spaced electrical conductive elements having interposed therebetween electrical insulators of a controlled resiliency adapted to be sequentially collapsed through stress induced in the presence of an applied compressive force of a continuously increasing magnitude for thereby accommodating a successive engagement of the adjacent surfaces of the conductors, whereby a series of electrical circuits is completed as the magnitude of the applied force is increased, a feature of the transducer being the employment of a current detector circuit connected with each of the conductors so that as an increasing compressive force is applied, and successive conductors are brought into a contiguous relationship, additional circuits are completed for thus establishing a series of electrical signals indicative of the magnitude of the applied force.

3,623,361
OPTICAL PROBING OF SUPERSONIC FLOWS WITH STATISTICAL CORRELATION
Buford H. Funk, Jr., Huntsville, Ala., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Nov. 4, 1969, Ser. No. 873,793
Int. Cl. G01m *9/00*; G01n *21/46*
U.S. Cl. 73—147 **14 Claims**

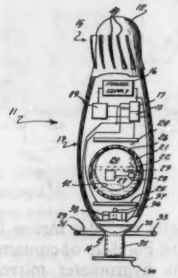


Method and apparatus for optical sensing of supersonic flows by correlating deflections in laser beams through the flow. Deflections in the laser beams are converted into meaningful electrical signals by use of a knife-edge before a photodetector, and the knife-edge is rotatable whereby both the translational and rotational motion of turbulent flow structures may be determined.

ERRATUM

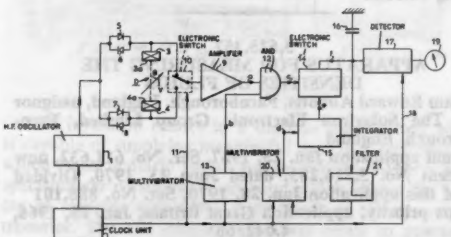
For Class 73—149 see:
Patent No. 3,624,828

3,623,362
FREE-FALL CURRENT METER
Robert Daniel Gerard, Palisades, N.Y., assignor to the United States of America as represented by the Secretary of the Navy
Filed Feb. 11, 1970, Ser. No. 10,328
Int. Cl. G01c *23/00*; G01p *5/08*
U.S. Cl. 73—189 **9 Claims**



A current measuring device for the continuous recording of current during the free fall and rise of an instrument is provided. The instrument contains recording and direction indicating equipment in its central portion, fins at its tail end to impart rotation and remotely positioned pressure probes at the ballasted nose end for sensing pressure differences indicative of the current encountered on both descent and ascent.

3,623,363
ULTRASONIC FLOWMETER
Jacques Gerard Dory, Goupvray-Esbly, France, assignor to Realisations Ultrasoniques, Paris, France
Continuation-in-part of application Ser. No. 799,212, Feb. 14, 1969. This application Mar. 9, 1970, Ser. No. 17,619
Claims priority, application France, Mar. 6, 1969, 6906227, 6906228
Int. Cl. G01p *5/00*
U.S. Cl. 73—194 A **4 Claims**



An apparatus for measuring the difference between the times of travel in a fluid of two acoustic pulses respectively transmitted at two points of the fluid and received at the two points after travelling through an identical distance

within the fluid, the apparatus comprising acoustic transmitter-receiver means located at the two points, storage means and an electronic switch connected to transmit to the storage means at the instants of reception of the received signals the instantaneous value of a voltage which obeys a predetermined law of variation.

This apparatus may be used as a flowmeter or for detecting a heterogeneous state within a fluid.

3,623,364

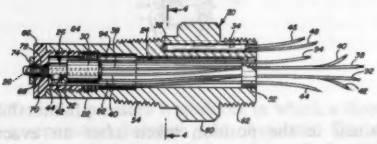
PROBE FOR INDICATING THE FLOW OF FLUID

Robert B. Withrow, 3864 Bayside Walk, San Diego, Calif. 92108

Continuation-in-part of application Ser. No. 485,155, Sept. 7, 1965. This application Dec. 16, 1968, Ser. No. 783,956

Int. Cl. G01p *5/10*

U.S. Cl. 73—204 **17 Claims**



The probe, in one embodiment, comprises a sensor whose resistance varies with the variations in temperature, an electric heater in heat exchange relationship with the sensor, and a casing that isolates the sensor and heater from direct contact with the fluid being probed. In another embodiment, the probe, in addition to the first mentioned sensor, includes an ambient reference sensor and a heater feedback signal sensor, the three sensors being in heat exchange relationship.

3,623,365

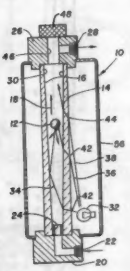
PHOTOELECTRIC FLOWMETER

Seymore Lowell, 42 Wood Hollow Road, Albertson, N.Y. 11507, and Stewart Karp, 67 Hickory Lane, Roslyn Heights, N.Y. 11577

Filed May 7, 1970, Ser. No. 48,574

Int. Cl. G01f *1/00*

U.S. Cl. 73—209 **5 Claims**



In measuring flow along a flow path between reference proximal and distal ends of said path, the technique of beaming light from the proximal end along the path and blocking select extents of the light from being transmitted to the distal end by a flow-measuring float or element in the flowing fluid so that the light which is transmitted to the distal end is correlated to flow parameters, and utilizing the transmitted light to provide a convenient display of what is being measured.

3,623,366

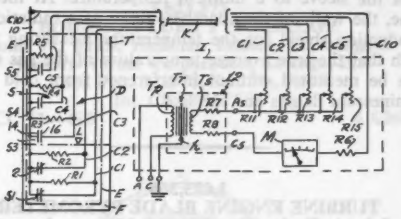
PRESSURE RESPONSIVE SWITCHES AND SYSTEMS PERTAINING THERETO

William G. Rowell, Canton, Mass., assignor to Former Electric Products Co., Inc., Natick, Mass.

Continuation-in-part of application Ser. No. 819,149, Apr. 25, 1969. This application Apr. 8, 1970, Ser. No. 26,650

Int. Cl. G01f *23/18*

U.S. Cl. 73—301 **28 Claims**



A pressure sensitive switch, contained within a pressure transmitting envelope, has a metallic supporting strip carrying a fixed contact, and a movable contact carried by a parallel flexible metallic strip spaced at its ends from the supporting strip by insulating pads so that the contacts are in close promixity. One end of the flexible strip is fixedly secured in cantilever fashion, while the other end is free to move except as restricted by its spacer. In one particularly useful utilization, levels of liquid or other fluent material are detected and indicated by means of a number of similar pressure-actuated switches disposed at different heights in the fluent material. The switches have a common metallic supporting strip and each switch includes a fixed contact carried by the supporting strip. In another particularly useful utilization, levels of liquid and other fluent material are detected and indicated by means of a number of pressure actuated switches disposed substantially at a common height in the fluid material. The switches have flexible strips of different resiliencies or with different contact gap widths so that closure of switches' contacts will take place at different fluid pressures corresponding to different levels. In both described utilizations, each of the switches is connected to remote level or pressure calibrated indicator means. Indicator lamps connected to a power source by means of the switches can be used for that purpose, or a resistance network whose resistance value changes with the closure of the switches to vary the current through an ammeter.

3,623,367

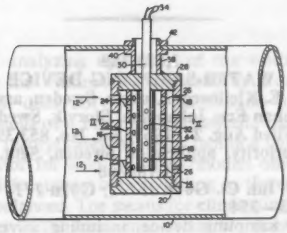
APPARATUS FOR MEASURING THE AVERAGE TEMPERATURE OF A GAS STREAM

Robert P. Benedict, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 23, 1969, Ser. No. 887,683

Int. Cl. G01k *3/06, 13/02*

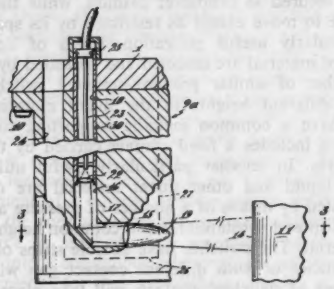
U.S. Cl. 73—340 **8 Claims**



Apparatus for measuring the average temperature of a hot gas stream, such as a combustion gas stream, having a temperature gradient across the stream at right

angles to its direction of flow. The apparatus includes a probe, adapted to be placed in the gas stream, which has inner and outer apertured chambers for mixing gas samples across the gas stream. The inner chamber contains temperature sensing means, preferably a plurality of parallel-connected electrical temperature sensing devices disposed within a temperature-averaging sleeve. In this manner, fluid samples across the gas stream are mixed before a temperature measurement is taken and serve to heat the sleeve to a uniform temperature. At the same time, the walls of the chambers serve as a radiation and conduction shield for the temperature measuring means such that the true average temperature of the gas stream can be measured without interference from cold walls, luminescent flames and the like.

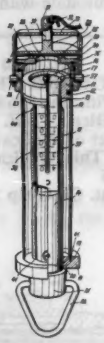
3,623,368
TURBINE ENGINE BLADE PYROMETER
John A. Decker, Jr., Concord, Mass., assignor to Comstock & Wescott, Inc., Cambridge, Mass.
Filed Mar. 9, 1970, Ser. No. 17,806
Int. Cl. F02c *7/00;* **G01j** *5/08;* **G01k** *1/12, 13/08*
U.S. Cl. 73—343 R **12 Claims**



In a jet turbine engine an optical passage extends through the stator blade first radially inwardly from the outer turbine wall, thence laterally toward the adjacent path of the moving rotor blades whose surface temperature is to be measured. In the end passage are a sapphire objective lens viewing and rceiving infrared from the rotor blade. At the focus of the objective lens is a quartz field lens for focusing the infrared energy on an infrared photodetector within the turbine or a quartz optical fibre leading to a photodetector outside the turbine. As the rotor blades pass the objective lens the photodetector produces a series of electrical pulses whose amplitudes are proportional to the blade temperatures. The pulses are sorted, measured and the temperature of each blade is registered to allow the detection of an individual overheated blade.

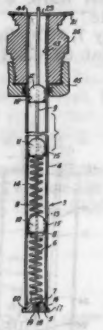
3,623,369
WATER-SAMPLING DEVICE
Ragnar E. Kjellberg, Kroksta, Sweden, assignor to Johan Eric Johansson, Storvik, Sweden
Filed Aug. 27, 1969, Ser. No. 853,394
Claims priority, application Sweden, Sept. 2, 1968, 11,780/68
Int. Cl. G01k *13/12;* **G01n** *1/10*
U.S. Cl. 73—354 **5 Claims**

A water sampling device, including a vessel capable of being closed and opened by means of a remote controlled valve and adapted to be lowered into lakes, rivers etc. for the purpose of collecting samples of water. The device includes a vessel capable of being opened and closed by a remote controlled valve means, a thermometer for measuring the temperature of the water, and a line for lowering the vessel down to the desired depth. It has a single actuating pump, the piston of which can



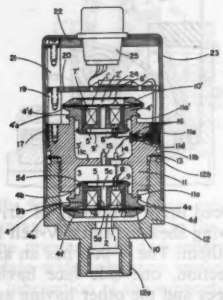
be retained in the position taken after an evacuation stroke. A closing valve cooperates with the evacuation chamber, and the movable valve means has an attachment for the line which can be opened by pulling said line.

3,623,370
HIGH TEMPERATURE BIMETAL THERMOMETER
Robert E. Busch, Elizabeth, Robert W. Freeman, West Orange, and Robert T. Luedeman, Metuchen, N.J., assignors to Weston Instruments, Inc., Newark, N.J.
Continuation of application Ser. No. 725,367, Apr. 30, 1968. This application Jan. 27, 1970, Ser. No. 6,230
Int. Cl. G01k *5/64, 15/00*
U.S. Cl. 73—363.9 **22 Claims**



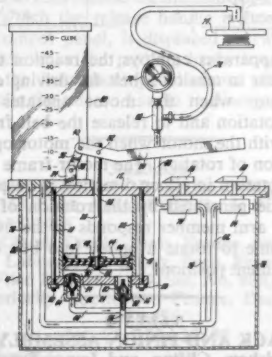
A high temperature thermometer employing a bimetallic temperature sensing element adjacent one end of a sealed housing. An oxygen getter is located adjacent the bimetal element that removes from the atmosphere within said sealed housing trace amounts of oxygen. An indicator is within said sealed housing remote from the bimetallic element and a temperature scale is secured to said housing adjacent said indicator. A force transmitter is connected between the bimetallic element and said indicator to move said indicator in response to thermal expansion of said bimetallic element.

3,623,371
PRESSURE TRANSDUCERS
Jean Jullien-Davin, Valence, France, assignor to Crouzet, Paris, France
Filed Feb. 24, 1969, Ser. No. 801,260
Int. Cl. G01l 9/14, 19/04
U.S. Cl. 73—393 5 Claims



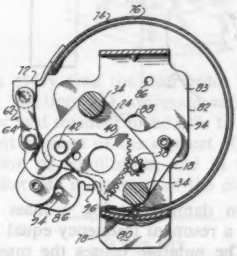
A differential pressure transducer in which a diaphragm forms a separation between two chambers. One of said chambers is subjected to a reference pressure whilst the other chamber is intended to receive the gas whose pressure is to be measured. The displacements of the diaphragm are measured by electromagnetic displacement-detection means having a winding connected to a measuring bridge and constituting one arm of said bridge. The detection means are disposed in one of the chambers which is inaccessible to said gas.

3,623,372
TEST INSTRUMENT FOR AUTOMOTIVE COOLING SYSTEM
Francis J. Markey, Lewisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 13, 1969, Ser. No. 876,253
Int. Cl. G01f 17/00
U.S. Cl. 73—49.7 2 Claims



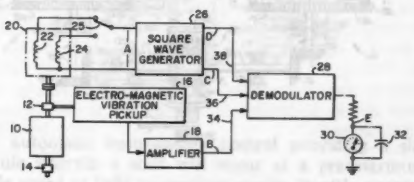
Apparatus for measuring the volume of trapped air within an automobile cooling system having a conventional radiator. A hydraulic pump is fluidly connected to the radiator through a passage in a modified closure cap until a pressure of 15 p.s.i. gage is attained in the radiator as indicated by a gage connected to the pump outlet. The pressurized coolant in the radiator is subsequently depressurized and discharged into a graduated container which measures its volume. The measured volume of coolant dispelled equals the volume of trapped air within the cooling system at 15 p.s.i. gage pressure. The volume of trapped air at atmospheric pressure within the cooling system equals approximately twice the volume of coolant discharged.

3,623,373
BOURDON TUBE TYPE GAUGE
Edmond W. Kraft, Hoffman Estates, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Feb. 9, 1970, Ser. No. 9,879
Int. Cl. G01l 7/04
U.S. Cl. 73—418 6 Claims



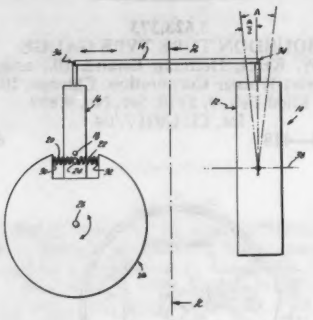
A pressure responsive gauge utilizing a plastic link for translating movement of a pressure responsive Bourdon tube to a dial pointer. If the gauge is used for sensing pressure over atmospheric, a headed snubbing device is used in the inlet to the Bourdon tube. A plastic frame pivotally supporting the pointer shaft and associated gears contains a silicone fluid. A mounting bracket having several sets of mounting holes carries the plastic frame to permit the gauge to be facilely assembled for several different types of movement.

3,623,374
VIBRATION ANALYZING APPARATUS
James A. Bauer, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 19, 1969, Ser. No. 886,695
Int. Cl. G01m 1/22
U.S. Cl. 73—462 7 Claims



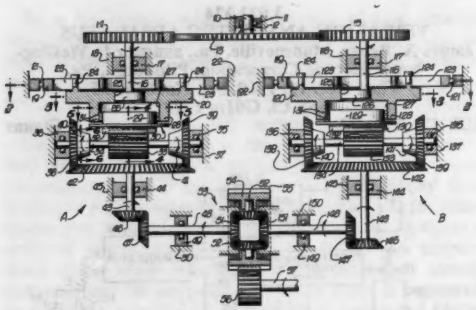
Vibration analyzing apparatus of the wattmeter type, but wherein the wattmeter is replaced by a demodulator circuit which does not require calibration for different operating speeds of a body to be balanced. The apparatus additionally incorporates means including a unique square wave generator for eliminating harmonics other than the fundamental frequency corresponding to the speed of the body being balanced. The means for eliminating harmonics is not a filter in the true sense of the word, but rather is based upon gating harmonic signals with square wave signals whereby the average direct current output due to harmonics will always be zero.

3,623,375
GYRO-NUTATION DAMPER
William H. Woodworth and Jack A. Crawford, China Lake, Calif., and James Parmerlee, Indianapolis, Ind., assignors to the United States of America as represented by the Secretary of the Navy
Filed Feb. 26, 1970, Ser. No. 14,406
Int. Cl. G01c *19/04*
U.S. Cl. 74—5.5 6 Claims



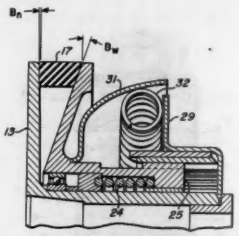
A gyro-nutation damper having a mass and spring combination with a resonant frequency equal to the nutation frequency. The nutation causes the mass to rotate. The rotation is started in first one direction and then the other by springs connected to the mass and the coupling shaft.

3,623,376
CONTINUOUSLY ENGAGED INFINITELY VARIABLE RATIO TRANSMISSION
Bernard J. Call, 2201 Walnut Ave., Manhattan Beach, Calif. 90266
Filed Nov. 12, 1969, Ser. No. 875,735
Int. Cl. F16h *35/00, 29/20, 19/04*
U.S. Cl. 74—125.5 27 Claims



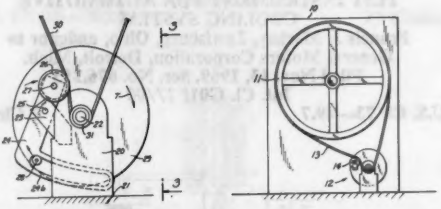
An infinitely variable ratio transmission in which an input shaft drives a pair of continuously engaged gear systems which respectively produce partial rotary motion of an output shaft, the cumulative angular motion of the output shaft being at constant velocity. In each system, a rotary cam reciprocates a follower and a rack carried thereby which oscillates a rack pinion, the latter intermittently rotating gearing through one-way clutches to unidirectionally rotate the output shaft. The cams are out of phase so that the output shaft is driven continuously and at constant velocity. The extent of reciprocation of the followers is adjustable to vary the transmission ratio.

3,623,377
ASYMMETRIC VARIABLE SPEED DRIVE
James A. Lewis and Larry R. Oliver, Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio
Filed May 6, 1970, Ser. No. 35,022
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 8 Claims



A variable speed drive consisting of driving and driven mechanisms having sheaves, and a V-belt for transmitting power between them. The V-belt has an asymmetric trapezoidal cross section, one side face having an angle of zero to six degrees and the other having an angle of 12 to 26 degrees. The angles of the sheave flanges correspond closely to the angles of the belt side faces. A cam housing is secured to the movable flange on the driving side and has a garter spring mounted concentric to the drive shaft which acts against the housing to create axial motion of the movable flange with respect to the fixed one. The optimum design is expressed by a formula relating to the various components of the drive.

3,623,378
CLUTCHING APPARATUS
Charles O. Stanford, Effingham, Ill., assignor to Fedders Corporation, Edison, N.J.
Filed Apr. 6, 1970, Ser. No. 25,752
Int. Cl. F26h *7/08*
U.S. Cl. 74—242.9 6 Claims

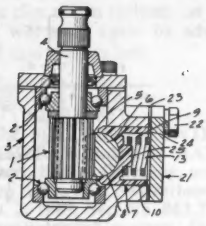


Clutching apparatus employs the reaction torque of a reversible motor to tension a belt for driving engagement with the motor when the motor operates in a first direction of rotation and to release the belt from driving engagement with the motor when the motor operates in a second direction of rotation. The motor frame is mounted to permit a rotation in either direction in response to the reaction torque generated by the rotation of the motor armature. An arm member responds to the movement of the motor frame to rotate a pulley into belt engagement and disengagement positions.

3,623,379
RACK AND PINION ASSEMBLY
Kenneth Bradshaw, Clifton, and James Ernest Buckingham, Hitchin, England, assignors to Cam Gears Limited, Hitchin, England
Filed Aug. 26, 1969, Ser. No. 853,054
Claims priority, application Great Britain, Sept. 20, 1968, 44,735/68
Int. Cl. B62d *1/20*
U.S. Cl. 74—498 5 Claims

A rack and pinion assembly for automotive steering gear having a cylindrical rack bar supported laterally and

opposite the pinion by a spring urged yoke formed of low friction, semi-rigid plastics material. The yoke has two concave rack bar seats or bearing surfaces. Each seat is fragmental-cylindrical in shape, has a larger radius than the radius of the cylindrical rack bar and a separate axis



disposed laterally from the rack bar axis. The seats are separated by a grease or oil passage in the concave bottom of the yoke. The greater radii and separate axes for the seats accommodate wide tolerance variations, wear, and insure adequate lubrication of the supporting seat areas.

3,623,380

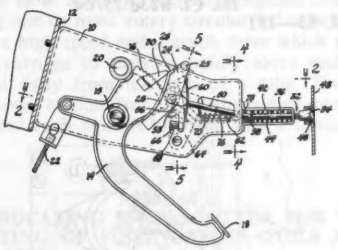
PARKING BRAKE RELEASE MECHANISM WITH RECESSED HANDLE

Eugene Tomczak, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 13, 1970, Ser. No. 54,109

Int. Cl. G05g *5/06*

U.S. Cl. 74—540 **3 Claims**



A hand-operated release mechanism for a parking brake control in which the release handle is stored in a recess in the instrument panel, is displaced rearwardly into the driver's reach when the parking brake is applied and retracts into the instrument panel recess after the vehicle operator pulls the release handle to disengage the parking brake.

3,623,381

ARRANGEMENTS FOR TREATING, AND IN PARTICULAR ANALYZING, A PLURALITY OF SAMPLES

Jean-Claude Crepin, Paris, France, assignor to Laboratories Choay, Paris, France

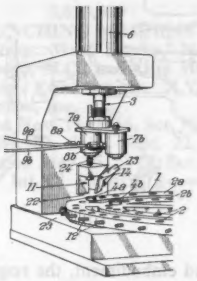
Filed Dec. 16, 1969, Ser. No. 885,662

Claims priority, application France, Dec. 16, 1968, 178,476

Int. Cl. B23q *17/00*

U.S. Cl. 74—822 **9 Claims**

Arrangement for treating a plurality of samples, comprising a distributor adapted to be driven with alternate movements between a "rest position" and a "working position," in which latter it is capable of carrying out at least part of the operations on one of the samples at a fixed station, and a support on which the samples are distributed at predetermined regular intervals, adapted to bring each sample to the aforesaid fixed station in succession, wherein the support carries abutment elements in positions which correspond respectively with those of the samples and the distributor carries a rocking member adapted to repel, at the cost of its inherent rocking action from a position of equilibrium, one of the aforesaid abutment elements to produce a unitary movement



of the plate every time the distributor is moved towards its working position, the aforesaid rocking action being sufficient for said member to be able to act on the following abutment element of the support after being returned to its position of equilibrium and in the course of the following alternate movement of the distributor.

3,623,382

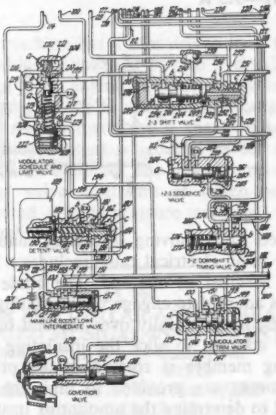
TRANSMISSION CONTROL

Howard E. Chana, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 17, 1970, Ser. No. 12,027

Int. Cl. B60k *21/06, 29/00*

U.S. Cl. 74—864 **8 Claims**



An automatic transmission control providing a shift schedule wherein a shift will occur at a predetermined vehicle speed at light to medium engine throttle openings and will occur at a disproportionately higher vehicle speed at a wider throttle opening.

3,623,383

HYDRAULIC LINKAGE SYSTEM

William L. Sheppard, 36655 Romulus Road, Romulus, Mich. 48174

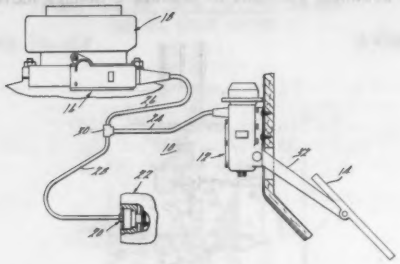
Filed June 25, 1970, Ser. No. 49,629

Int. Cl. F02d *11/08*

U.S. Cl. 74—865 **46 Claims**

A hydraulic linkage system particularly suitable for automobiles having an actuating transducer operated by the accelerator pedal for providing fluid in accordance

with the pedal movement to responding transducers for the carburetor and the automatic transmission for the automobile. In a first embodiment, fluid from the master cylinder is delivered directly to the automatic transmission. In a second embodiment, the responding transducer for the carburetor has means for compensating for carburetor friction and for providing a compensated fluid pressure signal to the automatic transmission.



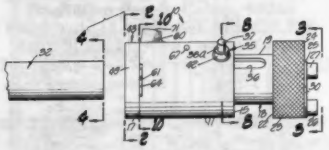
ERRATUM

For Class 75—41 R see:
Patent No. 3,624,825

3,623,384
DEVICE FOR REMOVING CABLE INSULATION

Robert W. Murphy, 921 W. Cambridge, Visalia, Calif. 93277

Filed Dec. 29, 1969, Ser. No. 888,779
Int. Cl. H02g 1/12
U.S. Cl. 81—9.5 R 10 Claims



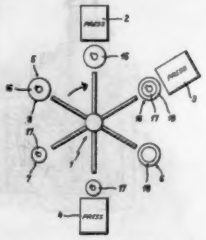
A device for removing insulating material around a conductor in an electrical cable includes a housing having a cutting member at one end. The blade of the cutting member is adapted to engage the insulating material after the housing is slid axially over the end of the cable and is further adapted to slice the insulating material when the cutting member is rotated in the proper direction. Control means are provided to limit the slicing of the blade and to determine the amount of insulating material to be removed.

3,623,385
NOTCHING PRESS

Franz Schneider, 34 Lessingstr., 732 Goeppingen, Germany; Gunther Grupp, 88 Hauptstr., 7332 Eislingen (Fils), Germany; and Otto Kurz, 3 Reustadt, 7321 Hattenhofen, Germany

Filed Dec. 11, 1969, Ser. No. 884,124
Claims priority, application Germany, Dec. 12, 1968, P 18 14 167.8
Int. Cl. B26d 11/00; B26f 1/14
U.S. Cl. 83—71 16 Claims

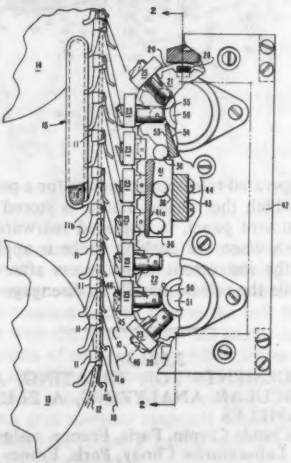
A notching press for producing stacks of lamination for conical armature motors wherein a punching tool is displaced radically related to the axis of a saddle stock shaft adapted to receive a sheet metal blank, and means is provided for effecting incremental radial displacement of the saddle stock shaft relative to the tool, wherein the incremental displacement means is operable to produce any one of a plurality of different displacement increments and a programming device is provided operative to determine a sequence in which said incremental displacements are selected, the programming device being programmable in dependence on the number of blanks required to form a lamination stack of the required dimensions.



3,623,386
HIGH THROUGHPUT ON-THE-FLY CARD CUTTING APPARATUS

Paul S. Bach, Lakewood, and Edward R. Clark, Long Branch, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 20, 1970, Ser. No. 21,324
Int. Cl. B23d 25/04
U.S. Cl. 83—151 10 Claims



Tabulating cards or the like are cam released in succession from gripper clips carried by an endless belt and caused to drop tail-edge-first a slight distance by gravity to register in respective card-receiving areas or pockets uniformly spaced along an endless means that moves in a path adjacent that of said belt at the time of card release. At each such pocket is a respective cutting tool comprising a movable blade that is moved in a direction perpendicular to the path of said endless means by engagement of a cam follower with a cam surface to cut beveled corners on the trailing edges of each card. After these corners have been cut, the endless means starts to carry the tool

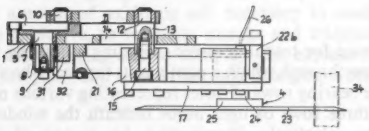
in a curved path around a hub. Due to the resultant temporary acceleration of the tool, the leading edge of each successive card is driven back up and into registry under the gripper clip from which it had been released during the cutting operation while the trailing edge is still supported by the pocket; and as the leading edge registers within the jaw of the clip, a cam recloses the clip to regrip the card so that it will once again be advanced solely under the control of said endless belt.

3,623,387

APPARATUS FOR SEVERING CONTINUOUSLY EXTRUDED THERMOPLASTIC MATERIAL

Gottfried Mehnert, Berlin, Germany, assignor to Conduco A.G., Zug, Switzerland

Filed Oct. 2, 1969, Ser. No. 863,772
Claims priority, application Germany, Oct. 5, 1968, G 68 01 078
Int. Cl. B26d *3/16*
U.S. Cl. 83—355 13 Claims



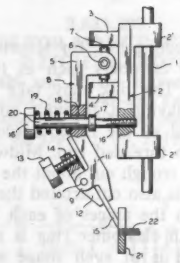
Apparatus for severing one or more continuously extruded tubes of deformable synthetic thermoplastic material in a blow molding machine comprises a carriage supporting one or more rotary circular knives which are driven at a high speed and a crank drive which reciprocates the carriage to thereby rapidly move each knife across and away from the path of a tube. The crank drive receives motion from a double-acting pneumatic cylinder, and each knife is provided with a serrated cutting edge.

3,623,388

RECIPROCATING KNIFE CUTTER FOR THE CUTTING OF FIBER CABLES, FOILS AND THE LIKE

Helmut Göttling, Gottstreu (Weser), and Karlheinz Richter, Lofelden, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

Filed Mar. 9, 1970, Ser. No. 17,773
Claims priority, application Germany, Mar. 27, 1969, P 19 15 600.4
Int. Cl. B23d *15/02, 35/00*
U.S. Cl. 83—582 6 Claims



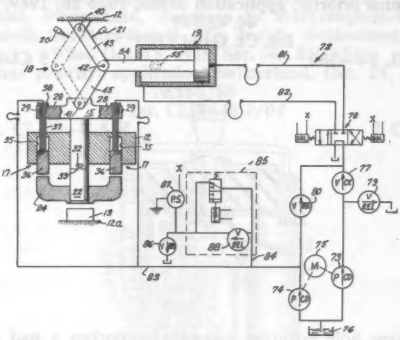
Shearing apparatus for the cutting of foils, fibers and the like with a guillotine-action knife, one blade of which is a stationary, U-shaped blade and the other of which reciprocates across the stationary blade, the holder for the reciprocating blade being mounted on a reciprocable carriage by a three-point suspension consisting of a universal joint at the apex and two resiliently-biased, laterally spaced, adjustable supports at the corners of the base of the three-point suspension.

3,623,389

PUNCHING MACHINE

Alexander Krynytzky, West Seneca, N.Y., Arthur K. Schott, Greensboro, N.C., and Otto Hoffmann, Tonawanda Township, Erie County, N.Y., assignors to Houdaille Industries, Inc.

Original application Nov. 14, 1966, Ser. No. 596,384, now Patent No. 3,529,502, dated Sept. 22, 1970. Divided and this application May 25, 1970, Ser. No. 41,143
Int. Cl. B26d *5/12*
U.S. Cl. 83—617 6 Claims



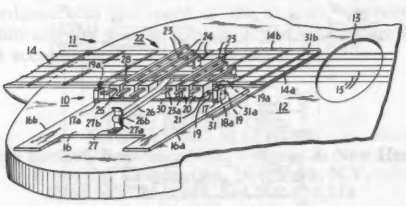
A punching machine has a ram driven by a fluid pressure actuator which is powered by two hydraulic pumps, the outlet of one pump having a relief valve which relieves before punching pressure is reached and which is isolated from the fluid actuator by a check valve, so that the rate of ram movement is reduced before maximum punching pressure is attained. The other pump outlet has an in-line relief valve, upstream of which relief valve there is connected a fluid-pressure actuated workpiece hold down member.

3,623,390

ADAPTOR FOR GUITAR AND SIMILARLY STRINGED MUSICAL INSTRUMENTS

Jack R. Pitt, Jr., 44 Casino St., Freeport, N.Y. 11520

Filed Dec. 7, 1970, Ser. No. 95,569
Int. Cl. G10d *3/02*
U.S. Cl. 84—294 9 Claims



An adapter for use with guitars and similarly stringed instruments is provided with a plurality of vibrating members which are disposed transverse to the strings of the

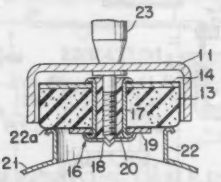
instrument and positioned so that the heads of the vibrating members can engage the strings of the instrument as it is being played. Means are also provided for mounting the adaptor either on the sounding board or the finger board of the instrument and for moving the vibrating members into and out of playing position. When in use, a sound effect is created by the adaptor similar to the sound achieved when two or more stringed instruments, such as guitars, are strummed or plucked to play the same piece of music at the same time.

3,623,391

TONE HOLE COVERING ASSEMBLY FOR USE IN WOOD-WIND MUSICAL INSTRUMENTS AND A METHOD OF ASSEMBLING THE SAME

Akira Nagao, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed June 18, 1970, Ser. No. 47,336
Claims priority, application Japan, June 20, 1969, 44/48,549
Int. Cl. G10d *7/00*
U.S. Cl. 84—380 **5 Claims**



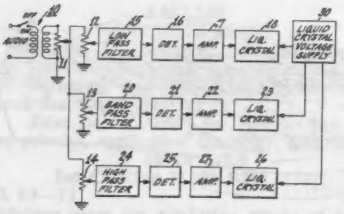
A tone hole covering assembly comprises a pad cup having a supporting rod projecting from the inner bottom surface thereof, a pad secured around a capsule with one end open, the supporting rod being inserted in the capsule, and a hot melt adhesive agent contained in the capsule and connecting the capsule with the supporting rod. The adhesive agent is introduced into the capsule in a powdery form, for example, and is heated while the pad is kept in an engaged relationship with a tone hole socket formed on a musical instrument, and is then cooled to a normal temperature, whereby the pad is secured to the cup in a desired airtightness with respect to the tone hole socket.

3,623,392

VISUAL DISPLAYS UTILIZING LIQUID CRYSTALS

Lawrence Adolph Boyer, Princeton, N.J., assignor to RCA Corporation

Filed Aug. 19, 1970, Ser. No. 68,168
Int. Cl. A63j *17/00*
U.S. Cl. 84—464 **9 Claims**



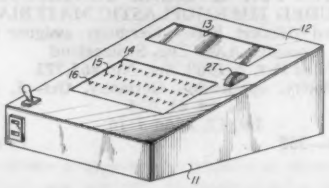
There is disclosed a display for the visual portrayal of sound into colored patterns utilizing liquid crystal devices which change color or alter their response to light according to the magnitude of applied control voltages derived from detecting electrical variations proportional to the frequency and intensity of sound.

3,623,393

DEVICE FOR TEACHING MUSIC

Gennaro J. Vollero, 12 Sycamore St., Bloomfield, N.J. 07003

Filed July 11, 1969, Ser. No. 841,027
Int. Cl. G09b *15/02*
U.S. Cl. 84—470 **6 Claims**



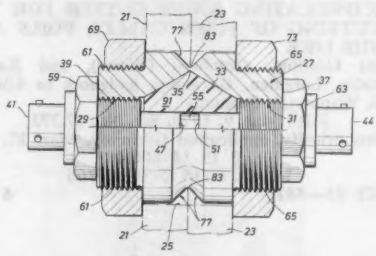
A device for teaching music including a housing having a window through which a continuous tape may be viewed, the tape bearing rows of notes representing various musical scales, three rows of light bulbs beneath the window and tape for selectively illuminating, by means of remote switches, each note in the row of notes on the tape as well as the indicia for a sharp above each note, and for a flat beneath each note, as well as means for transporting the tape without extinguishing the light bulbs.

3,623,394

FRANGIBLE LINK

Thomas O. Payne, Administrator of the National Aeronautics and Space Administration, with respect to an invention of David W. Murphy, Garden Grove, Calif.

Filed Jan. 28, 1970, Ser. No. 6,617
Int. Cl. F16b *35/00*
U.S. Cl. 85—1 **1 Claim**



A frangible connecting link for securing together two separable structural members such as two stages of a multi-stage missile. The link may take the form of a threaded fastener having a through bore with female threads on each end of the bore. Explosive detonators are disposed in each threaded end. Midway between the bores is a V-shaped trough cut about the bore periphery. A V-shaped trough is also cut around the outside periphery of the link with the apices of each trough being in radial alignment. An elastomer ring is molded into the internal trough and is of such shape as to provide a small cylindrical space between opposing faces of the respective detonators. Ignition of either detonator produces a gas pressure within the space and thereby exerts a tensile force between the trough apices via the elastomer ring, thereby causing structural failure along a single plane.

ERRATUM

For Class 87—75 see:
Patent No. 3,623,396

3,623,395
METHOD OF PREPARING SLURRIED EXPLOSIVES MIXTURES

Julius H. Paasch and Conrad W. Ehmke, North Rand, Transvaal, Republic of South Africa, assignors to African Explosives and Chemical Industries Limited, Johannesburg, Transvaal, Republic of South Africa

No Drawing. Original application Aug. 15, 1968, Ser. No. 754,113, now Patent No. 3,467,559, dated Sept. 16, 1969. Divided and this application Jan. 30, 1969, Ser. No. 833,210

Claims priority, application Republic of South Africa, Oct. 22, 1965, 65/5,703; Nov. 2, 1965, 65/5,903

Int. Cl. F42b *3/02, 33/02*

U.S. Cl. 86—20 **9 Claims**

Method of preparing a slurried explosives mixture of water, inorganic oxidizing salt, gelling agent, fuel and sensitizer which involves first forming a non-explosive mixture by mixing together all of the components except for the amount of oxidizing salt necessary to render the mixture explosive, to facilitate storage and transport and adding the oxidizing salt to complete the explosives mixture at the point and time of use and charging a borehole.

3,623,396
EXPANSION PLUG

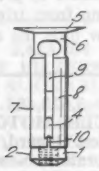
Louis Aackersberg Mortensen, Kongevejen 35 Birkerod, Denmark

Continuation of application Ser. No. 718,708, Apr. 4, 1968. This application Nov. 24, 1969, Ser. No. 872,462

Claims priority, application Denmark, Apr. 5, 1967, 1,943/67

Int. Cl. F16b *13/06*

U.S. Cl. 85—75 **7 Claims**



An expansion plug is provided which has an inner part and an outer part, these parts being axially displaceable with respect to each other, and means are provided on these parts for preventing the complete separation thereof and for maintaining the radial displacement of the outer part when the outer and inner parts are in a predetermined axial relationship.

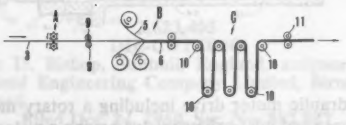
3,623,397
PROCESS FOR MANUFACTURING A WEIGHTED ROPE

Hisashi Hayashi and Yukio Hayashi, both of 2–16 Kagurazaka, Shinjuku-ku, Tokyo, Japan

Filed Mar. 13, 1969, Ser. No. 807,772

Int. Cl. D07b *1/06, 1/16, 5/00*

U.S. Cl. 87—6 **7 Claims**



A process for manufacturing a weighted rope or line adapted to be used as the lead line for fishing nets in fisheries. The present manufacturing process for weighted rope making involves the steps of: preparing a weighted elongated core comprising an elongated metal rod covered closely with a tubular member having elasticity, flexibility and shear resistance, with said metal core having thereon longitudinally spaced notched locations at which the rod is ready to be broken under torsional force, tensile force or deflection force; twisting or braiding the weighted core together with strands in the form of a rope; and finally exerting the torsional force, tensile force or deflection force on the finished rope thereby cutting the metal rod at said notched locations so as to provide a weighted rope having weighting pieces which are embedded and arranged longitudinally in the rope in such a manner that they are spaced apart from each other.

3,623,398
MISSILE LAUNCHER WITH MISSILES ON AN AIRCRAFT

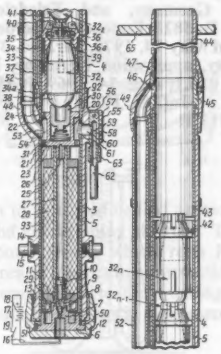
Heinrich Meier, Rumlang, and Hansjörg Walch, Niederglatt, Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Oct. 13, 1969, Ser. No. 865,654

Claims priority, application Switzerland, Oct. 29, 1968, 16,106/68

Int. Cl. B64d *1/04*

U.S. Cl. 89—1.5 R **7 Claims**



A row of missiles is arranged in a launcher tube sealed at one end. A propellant charge arranged between the tube seal and the row of missiles generates propellant gases, which are conducted both behind and in front of the row of missiles. The pressure of the propellant gases in front of and behind the row of missiles is of such proportions that the row of missiles is moved slowly through the launcher tube. When the respectively foremost missile passes the point where the propellant gases are conducted in front of the row of missiles, it is accelerated out of the launcher tube. A regulating member is connected to the propellant source and is operated by a device which measures the speed of the aircraft. The pressure of the propellant gases is thereby automatically regulated in accordance with the speed of the aircraft, whereby the rhythm and the muzzle velocity of the missiles are regulated accordingly.

3,623,399
ENGRAVING MACHINE

George Berlant, Bellerose, N.Y., assignor to New Hermes Engraving Corporation, New York, N.Y.

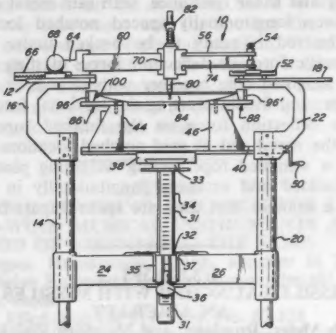
Filed Nov. 10, 1969, Ser. No. 875,151

Int. Cl. B23c *1/18*

U.S. Cl. 90—13.6 **5 Claims**

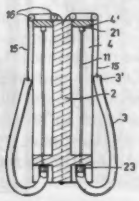
An engraving machine is disclosed having interchangeable sets of jaw extensions which render the machine universal in that curved and flatware may be engraved using

one set of jaw extensions. The jaw extensions are interchangeably attached to vise jaws. The vise jaws are mount-



ed for up and down movement as well as rotary movement.

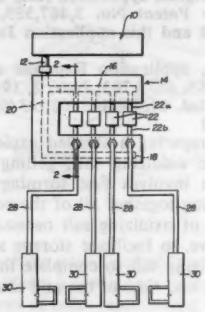
3,623,400
DISPLACEMENT DEVICE
Josef Binhack, 89 Alte Pforzheimer Strasse, D–754 Neuenburg, Germany, and Friedrich Keilholz, 1 Dohlenweg, D–5828 Ennepetal-Voerde, Germany
Filed May 14, 1970, Ser. No. 37,141
Claims priority, application Germany, May 16, 1969, P 19 25 026.1; Aug. 14, 1969, P 19 41 397.9
Int. Cl. F15b *11/00*
U.S. Cl. 91—411 R **19 Claims**



A displacement device composed of at least one piston connected to a fixed point by means of a piston rod and enclosed by a flexible cylinder guided along the piston rod at its head. A displacement unit is connected to and carried by the head of the flexible cylinder. The free end of the flexible cylinder is deflected by at least 90° and preferably 180° to facilitate its storage. Displacement of the cylinder head along the piston rod is achieved by charging the space between the cylinder head and the piston with a fluid pressure medium. To obtain greater displacements, any number of similar displacement devices may be telescoped so that each operates to displace the next succeeding device. The displacement device may be applied to lift and stacking vehicles, elevated work platforms, extension ladders, lifting devices and the like.

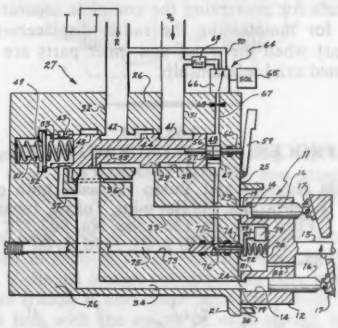
3,623,401
FLUID PRESSURE PROBE SYSTEM
Kenneth V. York, Royal Oak, and Thomas M. Pouch, Farmington, Mich., assignors to Multifastener Corporation, Detroit, Mich.
Filed Mar. 2, 1970, Ser. No. 15,606
Int. Cl. B23d *15/00*
U.S. Cl. 91—47 **4 Claims**

A fluid pressure probe system for generating a signal in response to the location of an article at a selected position at a work station. The system includes a plurality of individual differential responsive transducers connected in parallel to a common pressure manifold so that manifold pressure is normally applied to both sides of each transducer to normally maintain a zero differential pressure. A probe having a vent passage is connected to each transducer between one side of the transducer and the point of connection to the manifold. The outlet of the vent passage is normally closed by a simple ball valve seated in the end of the passage and maintained in its closed position by the pressure within the passage. The



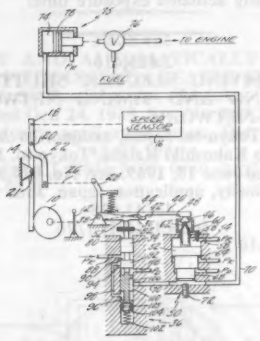
probe is mounted in the work station at a location such that the ball is unseated by the article when the article is in the desired location, thus creating a differential pressure at the transducer. A restricted orifice is located between the point of connection of the vent passage to the transducer and the point of connection of the transducer to one side of the manifold to prevent the pressure drop produced by the venting from triggering any transducers other than the one tow hich the activated probe is connected.

3,623,402
HYDRAULIC MOTOR DRIVE
Charles A. Kubilos, Oxnard, Calif., assignor to Abex Corporation, New York, N.Y.
Filed July 6, 1970, Ser. No. 52,599
Int. Cl. F15b *11/08, 13/043*
U.S. Cl. 91—421 **13 Claims**



A hydraulic motor drive including a rotary motor and a pilot operated inlet-exhaust valve having a piston mounted therein and a pilot chamber controlled by a governor operated valve responsive to the rate of rotation of the rotary motor.

3,623,403
ISOCHRONOUS GOVERNING SYSTEM CONTROL
Lawrence S. Smith, Simsbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 20, 1970, Ser. No. 21,260
Int. Cl. F15b 11/15
U.S. Cl. 91—458 11 Claims

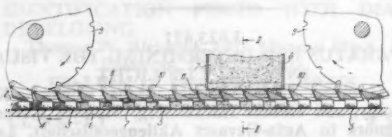


Governing is effectuated by feeding an error signal concomitantly to an integrating valve and a proportional valve each of which provide an output signal to an output mechanism for controlling the device governed by the governing system. The proportional valve may be indexed to the error producing mechanism to anticipate the set value governed by the governing system.

ERRATUM

For Class 92—42 see:
Patent No. 3,624,829

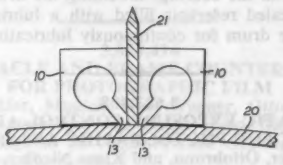
3,623,404
MANUFACTURE OF FILTERS FOR CIGARETTES OR SIMILAR SMOKABLE ARTICLES
Norman W. Jackson, London, England, assignor to Molins Machine Company Limited, London, England
Filed June 13, 1969, Ser. No. 833,020
Claims priority, application Great Britain, June 14, 1968, 28,606/68; Nov. 1, 1968, 51,802/68
Int. Cl. B23d 5/00
U.S. Cl. 93—1 C 9 Claims



The invention consists essentially in the use of an extended screen member which moves in unison with the garniture tape of a continuous filter rod forming machine and through which screen member granular or like loose filter material is showered to be guided by the screen member into pockets formed between filter plugs which are carried by and spaced apart along the garniture tape.

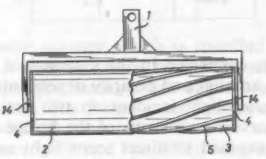
3,623,405
DIE-CUTTING
Thomas D. Bishop, Solihull, England, assignor to The Deritend Engineering Company Limited, Birmingham, England
Filed Dec. 24, 1969, Ser. No. 887,887
Int. Cl. B31b 1/14
U.S. Cl. 93—58.2 R 2 Claims

The invention is concerned with the rotary die cutting of cardboard blanks using a sheet metal forme fixed to one roll and having a pattern of cutting rule fixed to the surface of the forme and provides studs located on



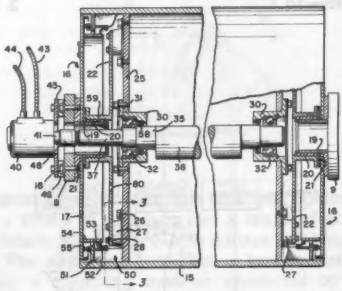
either side of the rule to hold the rule to the forme, the studs being laterally resilient so that the rule is gripped between a pair of studs.

3,623,406
SNOW COMPACTING ROLLER
Klaus F. W. Leben, Berg, Germany, assignor to Leben & Co. KG Vertrieb von Pistenpflegegeraten fur Skiabfahrten, Munich, Germany
Filed Jan. 29, 1970, Ser. No. 6,687
Claims priority, application Germany, Feb. 2, 1969, P 19 06 130.4
Int. Cl. E01c 19/24
U.S. Cl. 94—50 R 7 Claims



A roller drum to be towed behind an over-snow vehicle for preparing and conditioning ski runs. The roller drum has a flexible outer sheath which rests in contact only over a limited area of the drum construction so that snow which adheres temporarily to the working surface of the sheath falls off, due to the elastic movement of the flexible sheath.

3,623,407
VIBRATORY COMPACTION ROLLER
Seymour Dresher, Morristown, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed Nov. 21, 1969, Ser. No. 878,689
Int. Cl. E01c 19/28
U.S. Cl. 94—50 13 Claims



A vibratory compaction roller which includes a drum rotatably mounted on a frame. A central shaft having an eccentric weight is rotatably mounted within the drum. A motor rotates the central shaft to cause vibration of the drum. The bearings which mount the central shaft

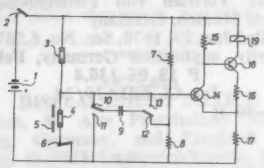
are separate from the bearings which mount the drum on the frame. Shock absorbers are positioned between the drum and the bearings mounting the drum to isolate the frame and the bearings mounting the drum from the drum. A sealed reservoir filled with a lubricant is provided in the drum for continuously lubricating the bearings.

3,623,408

AUTOMATIC EXPOSURE CONTROL ARRANGEMENT FOR PHOTOGRAPHIC APPARATUS

Karl Wagner, Ottobrunn, and Klaus Nicolay, Gruenwald, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 6, 1970, Ser. No. 61,597
Claims priority, application Germany, Aug. 20, 1969, P 19 42 286.7
Int. Cl. G01j *1/02*
U.S. Cl. 95—10 C **8 Claims**



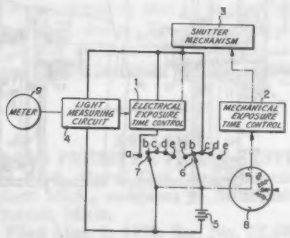
A capacitor, connected in the diagonal of a bridge, is charged to an amount and polarity dependent on the relative brightness of light incident on two series-connected photoconductors that are arms of the bridge. One photoconductor is exposed to direct scene light and the other to scene light through the objective. The capacitor is then connected to the base of a transistor and also to charge (or first discharge and then charge) through the one photoconductor until it reaches a value at which the transistor turns on, thereby turning off a further transistor, the collector of which is connected to the shutter control magnet.

3,623,409

ELECTRICAL OR MECHANICAL CAMERA SHUTTER

Naoyuki Uno, Iruma-gun, Saitama-ken, and Koichiro Watanabe, Tokyo-to, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed May 19, 1969, Ser. No. 825,682
Claims priority, application Japan, July 26, 1968, 43/52,487
Int. Cl. G03b *7/08, 9/58;* G01j *1/44*
U.S. Cl. 95—10 C **2 Claims**



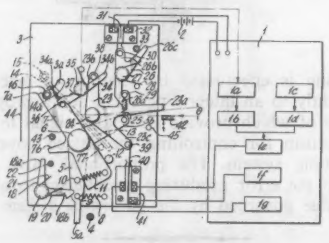
A camera shutter includes an electrical and a mechanical timer. A light measuring network provided with a visual indecator functtons as a light controlled timing network which triggers a solid state switch controlling the electrical timer. A pair of ganged switches selectively connect a battery to the measuring network alone, to the measuring and switch network, or deenergize both networks and is connected to the mechanical shutter speed control knob to energize both networks when the knob is at a position which either disables the mechanical timer or sets it at an exposure less than the minimum electrically actuated exposure time.

3,623,410

CAMERA HAVING ELECTRIC SHUTTER, LIGHT MEASURING AND TIMING NETWORK, AND MEMORY NETWORK

Kunio Mita, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 18, 1969, Ser. No. 834,314
Claims priority, application Japan, June 22, 1968, 43/43,038
Int. Cl. G01j *1/16*
U.S. Cl. 95—10 C **8 Claims**



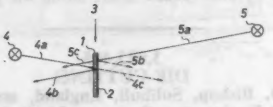
An automatic exposure timing system in a single lens reflex camera with a TTL light measuring system includes a memory device and a shutter timing network. A switch alternatively connects the memory device to the light measuring or timing network. A mirror return release mechanism consecutively actuates the switch to connect the memory device to the timing network and releases the mirror. The mirror retraction sequentially releases the automatic diaphragm and the shutter, and blocks the light measuring photocell. The closing operation of the shutter causes the spring return of the mirror and release mechanism and the actuation of the switch to connect the memory device to the light measuring network.

3,623,411

APPARATUS FOR DETERMINING THE VISUAL INTENSITY OF LIGHT

Hans Gunther, Georg Konigl, Hans Kortner, Klaus Nicolay, and Hubert Hackenberg, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

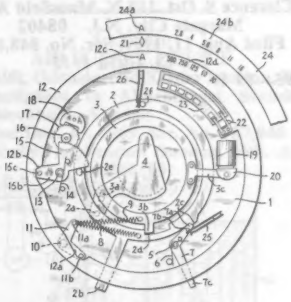
Filed July 29, 1969, Ser. No. 845,690
Claims priority, application Germany, July 31, 1968, P 17 72 999.6
Int. Cl. G01j *1/14;* G03b *7/00*
U.S. Cl. 95—10 B **27 Claims**



Apparatus for determining the visual intensity of light comprises an indicator including one or more interference mirrors which respectively transmit and reflect light in a first and a second range of the visible spectrum. One side of each mirror is exposed to light from a reference light

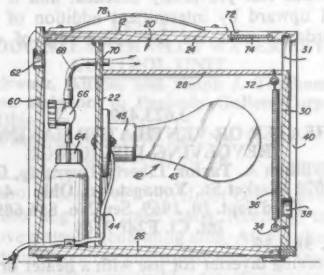
source and the other side of each mirror can be exposed to light issuing from an unknown source, particularly to scene light, whereby the color of light coming from the mirror or mirrors (including transmitted light from the unknown source and reflected light from the reference source, or vice versa) changes as a function of and indicates changes in the intensity of light from the unknown source.

3,623,412
MANUALLY AND AUTOMATICALLY SETTABLE SHUTTER WITH DISENGAGEABLE GOVERNOR
Kiyoshi Kitai, 54 Tomihisa-cho, Shinjuku, Tokyo, Japan
Filed Oct. 24, 1969, Ser. No. 869,256
Claims priority, application Japan, Oct. 24, 1968, 43/77,108
Int. Cl. G03b *7/08, 9/60, 9/62*
U.S. Cl. 95—10 C **9 Claims**



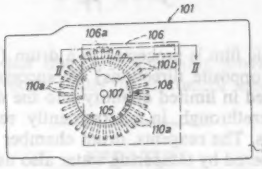
A camera is provided with a shutter actuating mechanism which is alternatively operable in both an "automatic" mode to control the exposure time in dependence upon the brightness of an object being photographed and a "manual" mode to selectively control the exposure time. A programmed governor mechanism is employed to limit the shutter opening speed when the camera is operating in the "automatic" mode and the governor mechanism is automatically rendered ineffective when the camera is operating in the "manual" mode.

3,623,413
APPARATUS FOR PRODUCING A COMPOSITE IDENTIFICATION PHOTO WITH DIAZO DEVELOPING
Thomas W. Richards, 1916 Mimosa Place, Fullerton, Calif. 92631
Filed Feb. 17, 1969, Ser. No. 799,559
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **2 Claims**



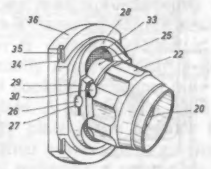
A portable diazo development apparatus including a housing with an exposure light and a manually squeezable bottle containing a developing reagent. By squeezing the bottle, reagent vapor is introduced into the housing of the apparatus thereby developing an exposed light-sensitive paper. A valve is connected to the squeezable bottle for controlling the flow of fluid therethrough.

3,623,414
RECEPTACLE AND FRAME COUNTER MEANS FOR PHOTOGRAPHIC FILM
Alfred Winkler, Munich, Karl Wagner, Ottobrunn, and Karl Bammesberger and Heinz Ernst, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 24, 1970, Ser. No. 31,654
Claims priority, application Germany, Apr. 30, 1969, P 19 21 978.4
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 FM **10 Claims**



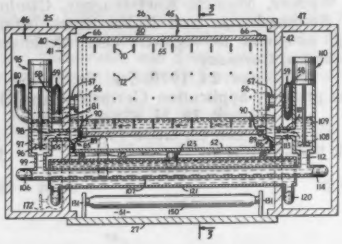
A film frame counter which is installed in a housing constituting a cassette or the body of a still camera for roll film of the type having a row of perforations, one for each film frame. The frame counter comprises an indexible wheel which is mounted on the rear wall of the cassette or camera body and has an annulus of elastic arms one of which is urged against the film by an inclined elastic cam so that it enters an oncoming perforation and indexes the wheel by a step whenever the film is advanced by the length of a frame. The wheel is connected with a numbered disk which travels along a fixed marker to indicate the number of exposed or unexposed film frames.

3,623,415
LENS MOUNT FOR A CAMERA
Josef Atzmüller, Berggasse 39, Linz, Austria
Filed Oct. 7, 1968, Ser. No. 765,412
Int. Cl. G03b *5/06*
U.S. Cl. 95—50 **3 Claims**



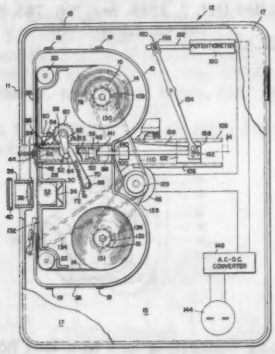
A mounting connects a lens to a lens holder so as to enable a tilting of said lens into a range of positions in which Scheimpflug's rule can be utilized in taking a photograph. The mounting comprises a lens mount carrying the lens, a mounting member connected to the lens mount, a connecting member connected to the lens holder, and an articulated joint connecting the connecting member to the mounting member for pivotal movement on a pivotal axis which intersects the pivotal axis of the camera within the joint, the articulated joint being adapted to be fixed in position.

3,623,416
PROCESSING SYSTEM FOR PHOTOGRAPHIC MATERIAL
Claes Johan Anderberg, Persikogatan 38, Vallingby, Sweden
Filed June 24, 1968, Ser. No. 739,329
Int. Cl. G03d *3/08*
U.S. Cl. 95—93 **22 Claims**



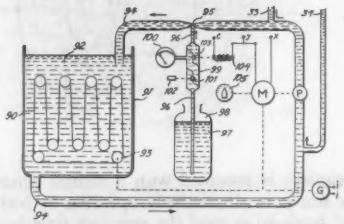
Photographic film is processed in a drum (intermittently rotated in opposite directions) by successive reagents each introduced in limited quantity into the drum and recirculated therethrough in intermittently reversed axial flow directions. The reagents, drum chamber and recirculator are tempered by tempering water also used for washing or rinsing the film . the drum. The reagents and water are supplied from stationary parts of the equipment to the drum by channels providing gravity flow paths from the drum. A controller unit is controlled by programs on cards inserted in the unit to automatically process the film in accordance with the program on the selected card.

3,623,417
SYSTEM FOR UNIFORMLY COATING EXPOSED MOTION PICTURE FILM WITH PROCESSING FLUID
Valto K. Eloranta, Needham, and Benjamin C. Ruggles, Gloucester, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Nov. 1, 1968, Ser. No. 772,789
Int. Cl. G03b *17/50*
U.S. Cl. 95—89 R **31 Claims**



A motion picture system utilizing a compact multipurpose cassette containing reel means for transporting a strip of film across a film gate and useful during exposure, processing and projection operations. An applicator containing processing fluid is positioned within the cassette in operable relationship with the exposed film strip while it is being transferred from one reel to another. Various unique features are included to insure that a uniform coating of processing fluid is applied to the exposed film strip including means for slidably mounting the applicator within the cassette so that it can be selectively brought into and taken out of contact with the film strip, a self-aligning support plate disposed on the opposite side of the film strip from the applicator, spring means for yieldably restraining the applicator against the film strip, a negator spring to provide a constant force on the processing fluid in the applicator and a motor control system to impart a constant speed to the film strip as it contacts the applicator. Additionally, a folded tape is employed to initially seal the orifice of the applicator when it is spaced from the exposed film strip and which is automatically stripped from the orifice as the applicator is brought into contact with the exposed film.

3,623,418
PHOTOGRAPHIC DEVELOPER REPLENISHMENT
Clarence S. Ost, 118 N. Mansfield Ave., Margate City, N.J. 08402
Filed Aug. 11, 1969, Ser. No. 848,867
Int. Cl. G03d *3/12*
U.S. Cl. 95—89 R **14 Claims**

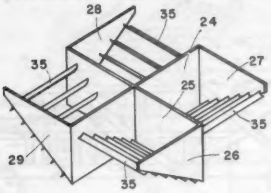


Developer replenisher is added to a bath of photographic developer, in accordance with monitoring of a test strip of photographic material developed by developer sampled from the bath, for the purpose of compensating for any loss in activity that otherwise would occur because of use, aging, or other reason. The photosensitive test strip is transported successively through an exposure chamber wherein it is exposed to actinic light, a development chamber wherein the exposed strip is developed by the sample of developer, and finally a monitoring chamber wherein the developed optical density of the strip determines the amount of light passing from a non-actinic light source to a photoresistive element in an electronic system for controlling the addition of replenisher to the developer bath. The monitored density is checked continuously against a value corresponding to an acceptable plateau of developer activity, and also periodically for any decrease in density as compared with the results obtained when last previously checked, and if deficient is adjusted upward by intermittent addition of replenisher in accordance with the prevailing rate of decrease in density.

3,623,419
HEATER OR VENTILATOR HAVING A REVOLVING DISCHARGE
William A. Taylor, Liberty Township, Ohio (5020 Market St., Youngstown, Ohio 44512)
Filed Sept. 10, 1969, Ser. No. 856,609
Int. Cl. F24f *7/09*
U.S. Cl. 98—39 **3 Claims**

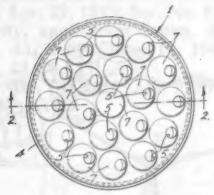
A revolving diverter for use with a heater or ventilating fan of the downward discharging type. The diverter has four openings for directing the air into four streams. Each opening has a number of curved blades which direct

the air stream into a fan-shaped pattern extending from the vertical to a diverging path. The blades are of such



curvature as to deflect the air into the desired stream without turbulence.

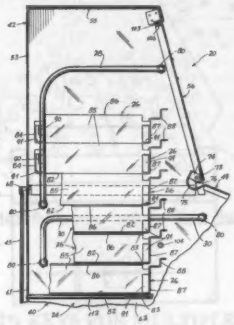
3,623,420
AIR SUPPLY DEVICE
Birger Larkfeldt, Odensjo, and Krister Larsson, Jonkoping, Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden
Filed Dec. 24, 1969, Ser. No. 887,946
Claims priority, application Sweden, Feb. 3, 1969, 1,386/69
Int. Cl. G03c *9/00*
U.S. Cl. 98—40 A **9 Claims**



For admitting ventilating air into a room with a low generation of sound, a plate having a plurality of passageways therethrough disposed obliquely to the axis of the opening in which the plate is mounted. Each passageway comprises a frustoconical bore which terminates in the outer surface of the plate in a spherical protrusion whose center of curvature coincides with the axis of the associated bore so that the opening is perpendicular to the axis of the bore and is circular. The preferred embodiment comprises a plurality of such plates which are circular and have a plurality of bores whose axes are parallel to one another so that the direction of injection of air through the plate may be altered by rotating the plate on its circular axis.

3,623,421
HOT DOG STEAMER WITH WATER LEVEL CONTROL UNIT
John F. Schwarz, Affton, and Ralph J. Tinkham, Overland, Mo., assignors to Peabody Galion Corporation, Galion, Ohio
Filed Apr. 24, 1970, Ser. No. 31,576
Int. Cl. A47j *36/24*
U.S. Cl. 99—234 A **13 Claims**

The present structure is a novel hot dog steamer. Open apertured hot dog and other food receiving trays are stacked above a steam generating area. All but the bottom tray are retained against horizontal removal, the bottom tray being manually removable for dispensing of the steamed dogs and other food. Upon removal of the bottom tray, an additional tray of dogs may be stacked on top, thus providing first-in first-out dispensing of the dogs. A bun warmer may replace the upper several trays in the steamer cabinet. Pivotally mounted removable upper and lower doors selectively close the steamer

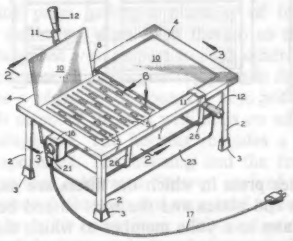


cabinet for hot dogs steaming and provide access, as required. A novel water level control assembly is provided.

ERRATUM

For Class 99—235 R see:
Patent No. 3,624,830

3,623,422
FOOD COOKING GRILL
Edward M. Marshall, 8107 SW. 72nd Ave., Apt. 102E, Miami, Fla. 33143
Filed Oct. 2, 1970, Ser. No. 77,548
Int. Cl. A47j *37/06*
U.S. Cl. 99—400 **7 Claims**

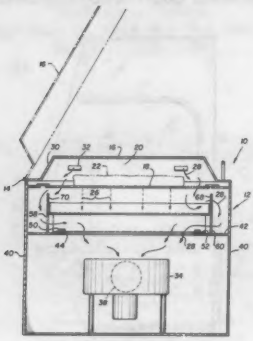


A grill for cooking food simultaneously on the upper and lower sides with a frame supporting a main perforated cooking plate over a detachable electric heat source. One or more manually operated gravity cooking plates for positioning and cooking the upper side of food resting on the main plate. A slot in said main plate for receiving each gravity plate in an angular food removal position and for further movement to gravitate downward to an idle position, including a removable receptacle in said frame for receiving drippings and for retaining an alternate heat source.

3,623,423
COOKING UNIT WITH VARIABLE COOKING TEMPERATURE
Victor M. Berger, 200—17 50th Ave., Bayside, N.Y. 11364
Filed Sept. 16, 1970, Ser. No. 72,629
Int. Cl. A47j *37/06*
U.S. Cl. 99—446 **5 Claims**

A cooking unit having a smoke removal downdraft in communication with the cooking chamber thereof, said

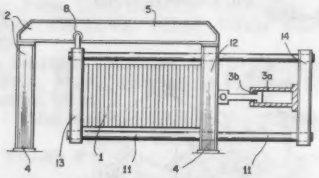
downdraft also removing heat from the cooking chamber whereby regulation of the volume of said downdraft results in a corresponding regulation of the cooking temperature within the cooking chamber.



3,623,424
PLATE FILTER PRESS

Oswald Busse and Hugo Klesper, Michelbach, Germany, assignors to Passavant Werke, Michelbacher Hutte, Germany

Filed June 30, 1969, Ser. No. 837,633
Claims priority, application Germany, July 27, 1968, G 67 50 401
Int. Cl. B30b *1/00*
U.S. Cl. 100—214 **4 Claims**



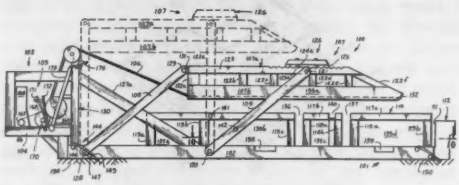
A plate filter press in which the filters are mounted on rods between end plates and the rods extend beyond one of the end plates to a yoke member to which the rods are connected. A pressurized cylinder unit acts between the yoke member and the end plate closest thereto, to urge the end plates toward each other to press the filters.

3,623,425
JUNKED METAL COMPRESSING SMASHER

Wesley D. Ballard, 2809 W. Garfield St., Phoenix, Ariz. 85009

Continuation-in-part of application Ser. No. 780,625, Dec. 3, 1969, which is a continuation-in-part of application Ser. No. 555,187, June 3, 1966, now Patent No. 3,413,914, dated Dec. 3, 1968. This application July 11, 1969, Ser. No. 840,902
Int. Cl. B30b *7/00*
U.S. Cl. 100—233 **11 Claims**

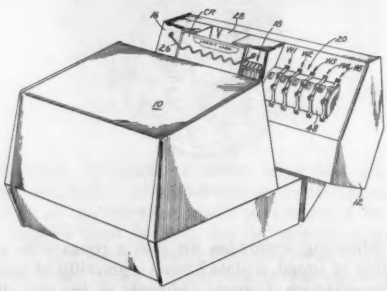
A junked metal compressing smasher comprises a base or anvil boxed in by said walls and an end stop at rear end and with a cantilevered platform at forward end. The hammer is supported above the base by support arms at a transverse station pivotally connecting base and forward end of hammer, and by support arms of equal length between pivot connections, at a transverse station rearwardly of the first station, pivotally connecting said base and said hammer at equal distances on said hammer as the distance between base stations. Thus, by this pantagraph type connection arrangement the crushing face of the hammer continuously remains substantially in a horizontal plane as it descends. Means cooperative with hoist cable dead ended on the hammer and hoist respectively effect the return of the hammer to a releasably latched upward position after each descent to crush junked metal.



3,623,426
PRINT CONTROL MEANS IN TRAVELING ROLLER BED AND CYLINDER PRINT MACHINES

George A. Gruss, Mentor, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 705,092, Feb. 13, 1968, now Patent No. 3,494,282, dated Feb. 10, 1970. This application Oct. 27, 1969, Ser. No. 869,540
Int. Cl. B41j *1/22*
U.S. Cl. 101—45 **12 Claims**



A power operated data recorder in which a hinged rear section serves as a bed of the machine against which a roller platen is designed to act. A variable data printing unit is provided in the movable bed of the machine and includes a plurality of print wheels, settable by manually actuated indexing wheels, for imprinting variable data on the form. The data recorder also includes lock-out means to prevent closing of the movable bed, or movement of the roller platen through a printing stroke, in those instances where the variable data print wheels have not been repositioned from an immediately preceding printing operation. Movement of only a single print wheel is effective to release the locking means to thereby permit operation of the machine.

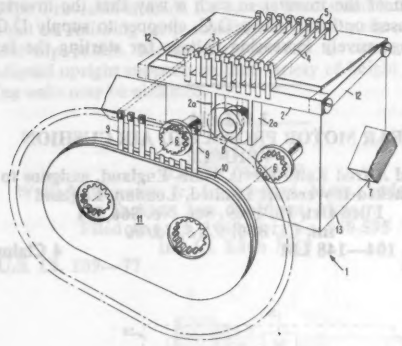
3,623,427
ROTATING TYPE CARRIER WITH SHIFTABLE HAMMER CARRIER

Gerold Buehrmann, Stuttgart-Botnang, Germany, and Guenter H. Schacht, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 8, 1969, Ser. No. 814,303
Claims priority, application Germany, June 1, 1968, P 17 74 370.3
Int. Cl. B41j *1/20, 9/10*
U.S. Cl. 101—93 **2 Claims**

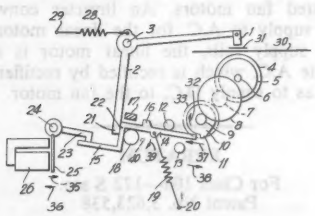
Printing arrangement for high-speed printers with rotating type carrier and several print hammers, consisting

of a unit which is uniformly moved along the printing line during printing. A minimum relative speed between



the record carrier and the fired types is obtained by means of a periodically shifted hammer carrier.

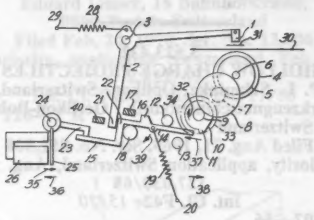
3,623,428
FLYING PRINTER
Issei Imahashi, Suwa-shi, Japan, assignor to Kabushiki Kaisha Suwa Seikosha
Filed Apr. 29, 1969, Ser. No. 820,199
Claims priority, application Japan, Apr. 30, 1968, 43/28,688, 43/28,690; May 13, 1968, 43/31,814, 43/31,815, 43/38,835
Int. Cl. B41j *9/10, 9/38*
U.S. Cl. 101—93 **21 Claims**



A flying printer having a trigger lever adapted for rotational and linear displacement, a print hammer adapted to effect printing in response to the linear displacement of said trigger lever, a continuously rotating ratchet wheel having at least one tooth extending therefrom for linearly displacing said trigger lever when said trigger lever is disposed in the path thereof, and means for selectively rotating said trigger lever into and out of the path of said ratchet wheel tooth to effect printing.

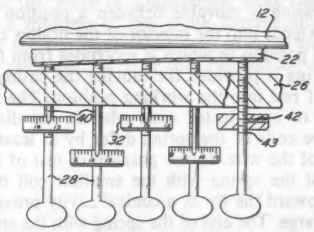
3,623,429
HAMMER LEVER CONSTRUCTION FOR FLYING PRINTER
Issei Imahashi and Shigeyoshi Hirabayashi, Suwa-shi, Japan, assignors to Kabushiki Kaisha Suwa Seikosha
Filed Apr. 29, 1969, Ser. No. 820,198
Claims priority, application Japan, Apr. 30, 1968, 43/34,990
Int. Cl. B41j *9/26, 9/42*
U.S. Cl. 101—93 **2 Claims**

The improvement in flying printers having a continuously rotating print drum, a hammer lever having a hammer mounted at one end thereof for striking said print drum upon the displacement of said hammer lever to effect printing and means for displacing said hammer lever, which includes the provision of a hammer lever stopper disposed to engage said hammer lever at a point spaced from said hammer to stop the displacement of said



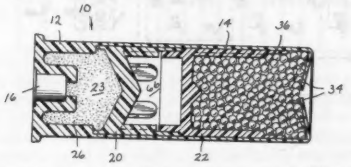
hammer lever immediately before said hammer strikes said print drum.

3,623,430
FOUNTAIN KEYS FOR MULTIPLE POINT CONTROL OF FOUNTAIN BLADE
Joseph Lessun, Levittown, Pa., assignor to Color Control Systems, Inc., Philadelphia, Pa.
Continuation-in-part of application Ser. No. 729,052, May 14, 1968. This application July 9, 1970, Ser. No. 53,357
Int. Cl. B41f *31/06*
U.S. Cl. 101—365 **10 Claims**



A printing press having a plurality of fountain keys with large calibrated dials fixed thereto so that adjacent dials are staggered with respect to each other. Additionally, an attachment kit for a printing press is disclosed. The kit includes a plurality of fountain keys with large calibrated dials disposed thereon with dials on adjacent fountain keys staggered. The housing includes a plurality of staggered apertures. The housing and the fountain keys cooperate so that calibrated dials on each of the fountain keys are exposed through the staggered apertures in the housing. Also a kit comprising calibrated grids for transferring fountain key setups on a first printing press to fountain keys on a second press wherein the spacings between the fountain keys on each of the presses are different.

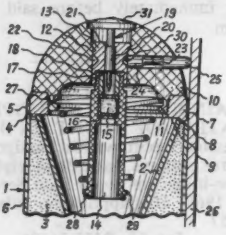
3,623,431
SHOT SHELL
Grover E. Hendricks, Niles, Mich., assignor to Eduardo R. Bermudez, Rolling Meadows, Ill.
Filed July 15, 1968, Ser. No. 744,922
Int. Cl. F42b *7/02, 7/08*
U.S. Cl. 102—42 C **10 Claims**



A shot shell including a cartridge case, a primer, a powder charge, shot and a wad. The wad is formed of

flexible shape-retaining plastic and has a closed air chamber which permits the partial collapse of the wad during detonation of the powder charge.

3,623,432
HOLLOW CHARGE PROJECTILES
Gerhard P. L. Schminke, Opfikon, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland
Filed Aug. 21, 1969, Ser. No. 851,808
Claims priority, application Switzerland, Aug. 22, 1968, 127,030/68
Int. Cl. F42c *15/20*
U.S. Cl. 102—56 **2 Claims**

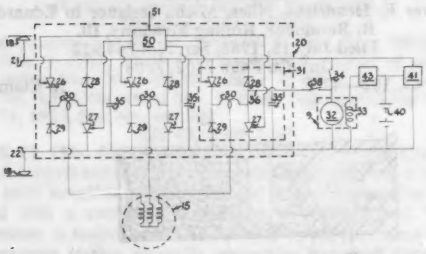


A hollow charge projectile having a projectile head in which a casing is movable between a position of rest in which it extends into the interior of the hollow charge and a working position in which it protrudes from the projectile. A spring is provided for moving the casing from the position of rest into the working position. The spring has the shape of a truncated cone wherein the diameters of consecutive coils of the spring differ by at least twice the diameter of the wire. In the position of rest of the casing, the end of the spring with the smallest coil diameter is directed toward the tip of a conical cavity provided in the hollow charge. The end of the spring with the smallest coil diameter is fastened to the casing and the other end of the spring with the largest coil diameter is fastened to the projectile head.

ERRATUM

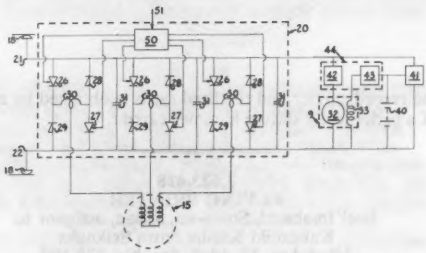
For Class 104—20 see:
Patent No. 3,624,831

3,623,433
CIRCUITS FOR TRACK GUIDED AIR CUSHION VEHICLE PROPULSION SYSTEM
Edward Alfred Keith Jarvis, Hale, England, assignor to Tracked Hovercraft Limited, London, England
Filed Oct. 15, 1969, Ser. No. 866,494
Int. Cl. B60l *9/18, 13/00*
U.S. Cl. 104—148 LM **4 Claims**



A track guided air cushion vehicle is propelled by a linear induction motor. D.C. is supplied along the track, and the air cushion devices are supplied with air from D.C. operated fan motors. An inverter converts the D.C. main supply to A.C. for the linear motor during normal operation. The fan motors are in addition connected to a portion of the inverter in such a way that the inverter can be used optionally as a D.C. chopper to supply D.C. at a progressively increasing voltage for starting the fan motor.

3,623,434
LINEAR MOTOR PROPELLED AIR CUSHION VEHICLE
Edward Alfred Keith Jarvis, Hale, England, assignor to Tracked Hovercraft Limited, London, England
Filed Oct. 15, 1969, Ser. No. 866,581
Int. Cl. B60l *9/18, 13/00*
U.S. Cl. 104—148 LM **4 Claims**

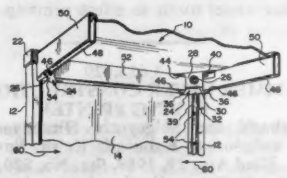


A track guided air cushion vehicle is propelled by a linear induction motor. D.C. is supplied along the track, and the air cushion devices are supplied with air from D.C. operated fan motors. An inverter converts the D.C. main supply to A.C. for the linear motor. If the main D.C. supply fails, the linear motor is arranged to regenerate A.C. which is rectified by rectifiers in the inverter so as to supply D.C. to the fan motor.

ERRATUM

For Class 104—172 S see:
Patent No. 3,623,538

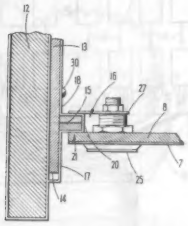
3,623,435
SHELVING UNIT AND FASTENINGS THEREFOR
Irwin J. Ferdinand, Glencoe, and Irwin R. Kulbersh, Morton Grove, Ill., assignors to The Hirsh Company, Skokie, Ill.
Filed Oct. 31, 1969, Ser. No. 873,013
Int. Cl. A47b *3/00, 43/00;* **F16b** *12/00*
U.S. Cl. 108—111 **8 Claims**



Lightweight knockdown steel shelving with securing means adapted to hold shelving and enclosing panel inserts to upright supports thereby forming rigidified shelving units such as a credenza. The securing means includes a corner fastening clip adapted to engage the box flanges of

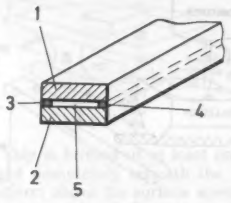
a shelf at a cut-out corner and clamp same to the inside of a corner support having a slot to receive side panels which are thereby held in place by the opposing forces of opposite clips. Provision is made for corner inserts and interlocking bead or finishing strip members at the junctures of side and top panels. Means are provided to connect axially aligned upright supports so that variety of height of shelving units may be obtained.

3,623,436
DOOR FRAME
Wylie W. Barrow, Jr., Chelmsford, Mass., assignor to Teckton, Inc., Waltham, Mass.
Filed Aug. 15, 1969, Ser. No. 850,595
Int. Cl. E06b *1/52*
U.S. Cl. 109—77 **3 Claims**



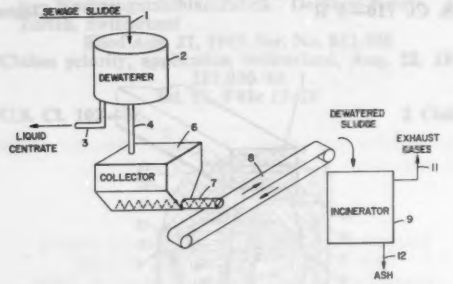
A door frame having a lead filled jamb with a stainless steel hat-shaped cover adapted to engage the edge of a door having a lead inner face and stainless steel outer face.

3,623,437
DEVICE FOR BURNING HOLES INTO CONCRETE, MASONRY, STONE OR METAL
Eduard Lusser, 16 Bahnhofstrasse, 8000 Zurich, Switzerland
Filed Feb. 24, 1970, Ser. No. 13,606
Claims priority, application Switzerland, Feb. 25, 1969, 2,822/69
Int. Cl. F23b *7/00*; F23d *21/00*
U.S. Cl. 110—1 R **6 Claims**



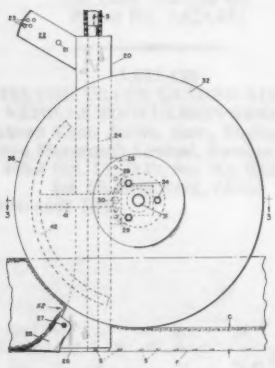
Device for burning holes into concrete, masonry, stones or metal comprising a metallic burning rod which has at least one channel extending over the entire length thereof and which is connected at its rearward end with a source of oxygen under excess pressure, the channel or channels that conduct the oxygen being as seen in cross section in the form of longitudinal slots the length of which is a multiple of the width thereof and the main masses of the rod material as seen in cross section being disposed perpendicularly to the longitudinal side of the slot.

3,623,438
DEWATERING OF SEWAGE SLUDGE
Paul J. Cardinal, Jr., Brisbane, Calif., assignor to BSP Corporation, Brisbane, Calif.
Filed Apr. 2, 1969, Ser. No. 812,609
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R 6 Claims



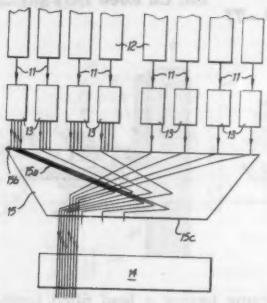
Apparatus and process for dewatering sewage sludge produced in a tertiary raw sewage treating procedure. Successive charges of predetermined amounts of sewage sludge are introduced into a batch-type dewatering device, such as a centrifuge, and processed therein to remove excess fluid. The dewatered sludge is collected and fed as a continuous stream into a sludge incinerator, such as a multiple hearth furnace. Batch dewatering produces a drier sludge cake, thus permitting use of a smaller incinerator for given production rates with substantial reduction in operating costs and capital outlay.

3,623,439
SEED DRILL FURROW OPENER
John E. Hair, Jr., Prescott, and Richard E. Hair, Walla Walla, both of Wash., assignors to Deere & Compnay, Moline, Ill.
Filed Oct. 9, 1969, Ser. No. 865,099
Int. Cl. A01c 5/00
U.S. Cl. 111—85 7 Claims



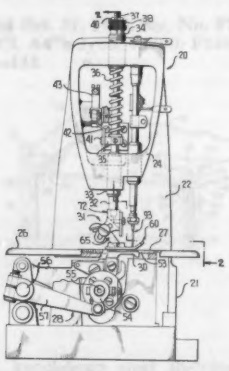
A seed drill in which a furrow opener, serving as the lower portion of the seed delivery tube, is laterally narrow. A pair of press-wheel disks having sharp rims, one at each side of said furrow opener and in close tolerance, is journaled for rotation on axes or an axis substantially at the trailing edge of the said opener and the disks are sufficiently large diametrically to dispose the forward portion of their sharp rims substantially ahead of the leading edge of the furrow opener; the disk axes being vertically adjustable with respect to the said furrow opener. When the said rims are in parallel planes, a soil guard disposed therebetween minimizes the quantity of soil that may pass between the disks.

3,623,440
TUFTING
Robert Spedding, Wilpshire, Blackburn; William Sandford Hasler, Langho, Blackburn, and Raymond Victor Evans, Feniscowles, Blackburn, all of England, assignors to Singer-Cobble Limited, Blackburn, England
Filed Oct. 30, 1968, Ser. No. 771,936
Claims priority, application United Kingdom, Oct. 31, 1967, 49,362/67
Int. Cl. D05c 15/00, 15/18
U.S. Cl. 112—79 A 7 Claims



In order to maintain pattern register between moving yarns having dyestuffs applied thereto at intervals therealong during the transverse rearrangement of such yarns, as, say, to give a pattern repeat, the yarns are all caused to move through a like distance as measured in the longitudinal direction of the yarn, during the rearrangement by providing a guide tube for each yarn through which the yarn passes, the said tubes all being of constant length and each serving to transfer a respective yarn from an initial position transversely of a yarn sheet or sheets issuing from a dyeing means to a final position transversely of a yarn sheet or sheets proceeding to a tufting machine or other combining means.

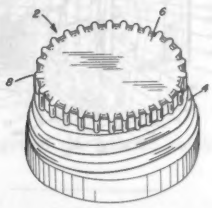
3,623,441
PRESSER MECHANISM FOR SEWING MACHINES
Edgar Scholj, Hinsdale, and Frederick M. Klose, Chicago, both of Ill., assignors to Union Special Machine Company, Chicago, Ill.
Filed Nov. 21, 1969, Ser. No. 878,635
Int. Cl. D05b 29/00
U.S. Cl. 112—235 18 Claims



This disclosure relates to a low-inertia adjustable stroke presser foot for sewing machines which is operable to feed the uppermost ply of superimposed plies being sewn to com-

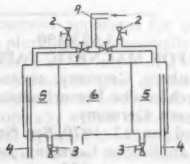
pensate for the drag exerted by the presser foot sole upon the upper ply. The presser foot is automatically driven through its cooperation with the feed dog and effects the feeding of the upper ply at the termination of the work feeding action of the feed dog. The presser mechanism is adjustable to vary the work feeding movement of the presser foot in accordance with the requirements of the fabric being sewn.

3,623,442
KNURLED CLOSURE
Wilburn Coy Willis, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Mar. 14, 1969, Ser. No. 807,189
Int. Cl. B21d *51/00*
U.S. Cl. 113—121 A 6 Claims



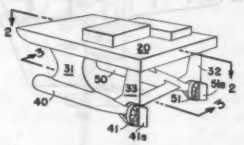
A method of forming an annular knurled band on two surfaces of a container closure by providing a generally cylindrical closure shell having a top panel and a depending annular skirt. Forming a plurality of outwardly directed knurled portions within a plurality of first circumferential arcs by outwardly reforming the arcs to establish in each knurled section a lower portion extending radially outwardly from the annular skirt and an upper portion formed as a continuous extension of the lower portion, extending upwardly and outwardly from the top panel. Forming a plurality of inwardly directed knurl portions in second circumferential arcs in alternating position with the outwardly directed knurl portions by restraining the second arcs against outward movement. The closure having both the outwardly directed and the inwardly directed knurled portions each of substantially uniform transverse width throughout their longitudinal extent. The knurling originates within the upper half of the skirt and terminates at its uppermost level in the upper panel.

3,623,443
UNDERWATER HOUSING STRUCTURE
Gunter Luther (Mulheim), Ruhr, Germany, assignor to Deutsche Babcock & Wilcox Aktiengesellschaft, Oberhausen, Germany
Filed Nov. 12, 1969, Ser. No. 875,643
Claims priority, application Germany, Nov. 13, 1968, P 18 08 557.9
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 E 4 Claims



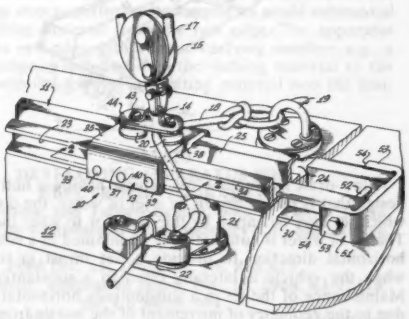
An underwater housing structure including one or more flood tanks and having supply pipes and vent pipes which control the gases for flooding the tanks and arranged so that the gas may be supplied or vented through the highest point of the flood tank. A pressure balance pipe is provided which starts at one end of the gas chamber of the flood tanks and terminates below the flood tank in the water surrounding the outside of the structure.

3,623,444
HIGH-SPEED SHIP WITH SUBMERGED HULLS
Thomas G. Lang, 5354 Calle Vista, San Diego, Calif.
Filed Mar. 17, 1970, Ser. No. 020,204
Int. Cl. B63b *1/10*
U.S. Cl. 114—61 18 Claims



A high-speed ship is formed of at least one elongate hull section submerged completely beneath the water's surface supporting a platform above the surface waves by a plurality of struts dependent from the platform to provide support and stabilization by reason of their configuration and location. High-speed dynamic pitch stability is ensured by including a stabilizer member on the aft portion of the submerged hull having a horizontally oriented control surface sufficiently sized to locate the greatest composite, vertical pressure surface substantially aft of the ship's centroid. Controlling the angle of the stabilizer member in accordance with changing wave conditions and speed provides a highly stable cargo transport capability as well as superior weapons platform.

3,623,445
SAILBOAT TRAVELER APPARATUS
Tracy S. Holmes, 649 Hightree Road, Santa Monica, Calif.
Filed Apr. 6, 1970, Ser. No. 25,939
Int. Cl. B63h *9/10*
U.S. Cl. 114—204 8 Claims

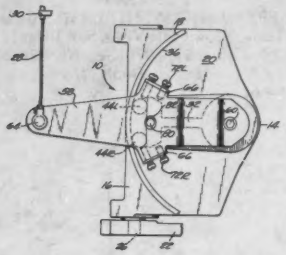


Traveler apparatus including an extruded track having a top groove and oppositely opening side grooves, and a traveler of U-shaped cross section overlying the track with two sets of side rollers in the side grooves and a set of top rollers on the top groove. Each side set comprises three rollers, the center roller of each set being offset downwardly to increase the effective width of the set. The track is attached by bolts through the bottom of the top groove, and a short section of the same shape as the traveler is bolted to each end of the track.

3,623,446
SWIVEL BRACKET LOCK NO BACK STEERING
William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed May 19, 1969, Ser. No. 825,834
Int. Cl. B63h *21/26*
U.S. Cl. 115—18 5 Claims

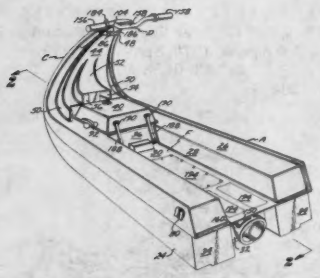
Disclosed herein is an outboard motor steering mechanism including a locking lever fixedly secured to a marine propul-

sion unit mounted for pivotal-steering movement on a swivel bracket, a pair of rollers biased to positively restrain movement of the locking lever with respect to the swivel bracket and a steering arm pivotally connected to the propulsion unit



and having a first set of adjustable members to release one or the other of the rollers and a second set of adjustable members to engage the locking lever after releasing one or the other of the rollers.

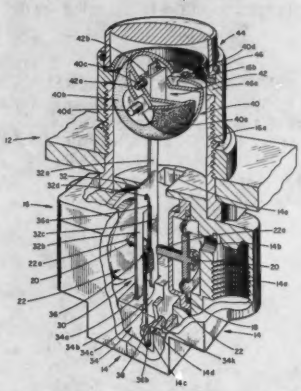
3,623,447
POWERED AQUATIC VEHICLE
Clayton J. Jacobson, 5403 Seacrest Drive, Rolling Hills, Calif.
Filed Jan. 21, 1970, Ser. No. 4,631
Int. Cl. A63h *5/08*; **B63h** *11/00*
U.S. Cl. 115—70 **9 Claims**



A low-draft hydroplanelike vehicle having a hull of stable design that is power driven by a jet of water, the direction of which jet may be varied by the operator to steer the vehicle. The jet of water is automatically maintained in a substantially horizontal direction to provide a flat thrust in turns even when the vehicle is laterally tilted to a substantial degree. Maintenance of the jet in a substantially horizontal direction due to the geometry of movement of the nozzle from which it is ejected provides maximum forward drive to the vehicle and a minimum tendency for the stern of the vehicle to lift from the water during a tight turn. Upward movement of the stern relative to the water results in the vehicle momentarily being in an unstable condition in which the operator is frequently thrown therefrom. The vehicle is of such design that water will not enter the engine compartment or flood the exhaust in the event the vehicle capsizes, or when the vehicle is stationary.

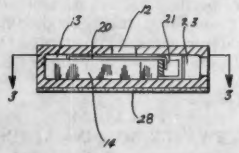
3,623,448
TWO-POSITION PANEL INDICATOR
John S. Resh, and James D. Vincent, both of Freeport, Ill., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 17, 1969, Ser. No. 877,386
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **5 Claims**

A mechanical panel indicator with a two-position mechanism capable of providing snap action which mechanism is operable under the influence of a motor for causing changes in indicator condition. Adjustment means are provided to selectively allow for maintained or momenta-



ry indicator conditions when the influence of the motor is removed.

3,623,449
IMPACT ACCELERATION INDICATOR
Robert C. Knutson, Rosemount, Minn., assignor to Vexiler, Inc., Minneapolis, Minn.
Filed Aug. 15, 1969, Ser. No. 850,544
Int. Cl. G01p *15/04*; **G01h** *35/14*
U.S. Cl. 116—114 AH **7 Claims**

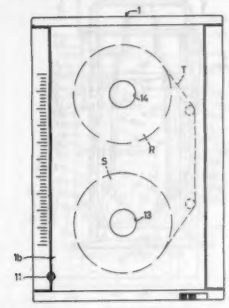


A recording instrument which will produce a visual or electrical signal indicating when a preselected acceleration level has been experienced by the instrument, and will permanently record such impact so that when the instrument is attached to a package, a visual examination of the instrument will indicate whether or not the package has been dropped or subjected to a damaging impact.

3,623,450
CASSETTE FOR MAGNETIC TAPE OR THE LIKE
Imre Siller, Nurnberg, Germany, assignor to Grundig E. M. V. Elektro-Mechanische Versuchsanstalt, InH.: Max Grundig, Furth Bayern, Germany
Filed Jan. 12, 1970, Ser. No. 2,192
Claims priority, application Germany, Jan. 11, 1969, G 69 00 933
Int. Cl. G09f *9/00*
U.S. Cl. 116—133 **11 Claims**

A cassette for convoluted magnetic tape having a flat plastic housing one narrow wall of which is provided with a window located in front of two coaxial indicia bearing wheels which can be adjusted so as to expose a combination of digits or other symbols indicative of the information stored on the

tape. The wheels can be rotated independently of each other and are biased apart by a prestressed spring which prevents

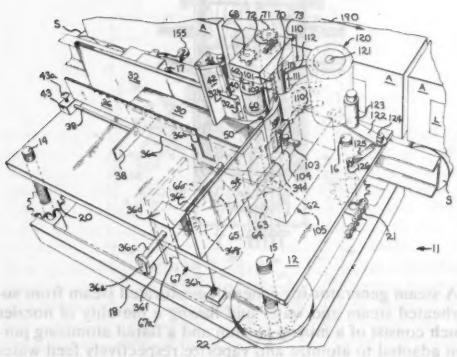


unintentional changes in the selected combination of observable symbols.

3,623,451
GLUE ROLLER ASSEMBLY

Billy Burgess, Sylvania; John H. Burgess, Sylvania, Ohio; Larry C. Gess, Samaria, Mich.; Robert P. Snyder, Sylvania, and Washington I. McGilvery, Whitehouse, Ohio, assignors to Advance Products, Inc., Whitehouse, Ohio

Filed Oct. 16, 1968, Ser. No. 768,060
Int. Cl. B05c *1/02*
U.S. Cl. 118—62 **9 Claims**

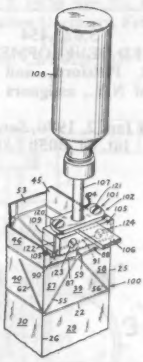


A glue roller and reservoir apparatus for use in applying glue to the surface of a plurality of sequentially moving labels or tickets, said apparatus being inclusive of a vessel reservoir for liquid glue, a hollow rotatable glue applicator sleeve extending vertically upwardly out of said vessel for contact by the labels, a rod telescopically within said glue roller sleeve, said outer surface of said cylindrical roller having a plurality of spaced grooves therein, a bar mounted along side the sleeve having notches defining teeth complementary to said grooves and an arrangement for urgement of adhesive fluid in the vessel between the rod and the inner surface of the cylindrical glue roller whereby it moves upwardly, thence down the outer surface of the glue roller cylinder, the complementary notches and grooves serving to locate the downwardly moving adhesive in a plurality of spaced regions on the exterior surface of the cylinder glue roller.

3,623,452
APPARATUS FOR PRODUCING READILY OPENABLE PLASTIC CONTAINERS

Harold B. Moors, Richboro, Pa., and Frederick E. Bichaylo, Marlton, N.J., assignors to International Paper Company, New York, N.Y.

Original application Oct. 11, 1967, Ser. No. 674,458, now Patent No. 3,525,194, dated Aug. 25, 1970. Divided and this application Oct. 22, 1969, Ser. No. 871,193
Int. Cl. B65b *7/18*; B05c *11/10*
U.S. Cl. 118—267 **4 Claims**

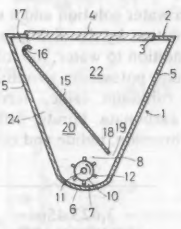


The major portion of the raw edge (and adjacent areas) of the pouring spout of a plastic coated gable-top container is wet prior to heat sealing of the gable top and then the gable top is heat sealed to effect a liquidtight container closure. The wetting material, all or most of which should be a volatile liquid, coats the raw edge and penetrates the fibers of the coated stock. A wetting agent and/or a thickening agent is used to achieve wetting and to provide a coating of the wetting material on the raw edge and adjacent areas. The heat sealing step is performed promptly to avoid substantial loss of wetting material from the raw edge. The apparatus contacts the raw edge with a liquid-carrying member, e.g., a suitable sponge, which transfers the wetting material to the raw edge without dripping of wetting material into the container.

3,623,453
DEVELOPING APPARATUS FOR ELECTROPHOTOGRAPHY

Ryubun Seimiya, and Tohoru Uchida, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1969, Ser. No. 885,479
Claims priority, application Japan, Dec. 18, 1968, 43/92314
Int. Cl. B05b *5/04*
U.S. Cl. 118—309 **10 Claims**



A powder cloud developing apparatus comprises a housing having a top wall in which is formed an opening for receiving an image member, and having an inclined sidewall which is contiguous with the top wall. A flow control plate is arranged

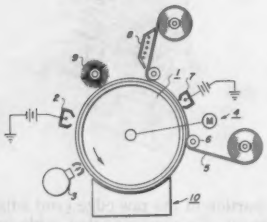
opposite the sidewall and defines a flow channel therewith. The plate has a width commensurate with the housing, and terminates adjacent the top wall to define an exit from the channel. A rotor having a length greater than its diameter is positioned horizontally below the plate, but above the bottom of the housing, and is peripherally provided with blades or projections which, upon rotation of the rotor, scramble developer charged between the rotor and the bottom and throw it against opposing surfaces of the flow control plate and the inclined sidewall. An air stream, created either by the bladed rotor or by separate fan means, conveys the developer through the channel and the exit so as to travel across the opening.

3,623,454

FLUIDIZED BED DEVELOPMENT APPARATUS

John S. Bernhard, Pittsford, and Alan F. McCarroll, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Jan. 2, 1970, Ser. No. 78
Int. Cl. B05b *5/00*
U.S. Cl. 118—637 **14 Claims**



An apparatus for developing a latent electrostatic image wherein the developer material is circulated past the image bearing surface in a fluidized state. The fluidization of the developer material is achieved by the use of a vibrated bed mechanism which agitates the developer into a fluidized state in the development zone. The mechanical agitation or vibration of the fluidizing mechanism is effected through the use of two counter rotating weights which achieve a controlled degree of vibration with a minimum force and vibration being imparted to the xerographic machine in which the development device is utilized.

3,623,455

ARTIFICIAL SEA WATER SOLUTION AND COMPOSITION FOR MAKING THE SAME

William E. Kelley, Euclid, and Vernon C. Goldizen, Cleveland Heights, both of Ohio, assignors to Aquarium Systems, Inc., Wickliffe, Ohio

Continuation-in-part of application Ser. No. 641,481, May 26, 1967, now abandoned. This application Feb. 5, 1969, Ser. No. 796,882
Int. Cl. A01k *61/00*
U.S. Cl. 119—3 **8 Claims**

An artificial sea water solution and a solid composition for making such a solution by dissolving in water. The solution may include, in addition to water, the following ions: sodium, magnesium, calcium, potassium, strontium, manganese, lithium, aluminum, rubidium, zinc, ferric, cobalt, copper, chloride, sulfate, carbonate, borate, orthophosphate, molybdate, thiosulfate, bromide, iodide and ethylene diamine tetraacetic acid.

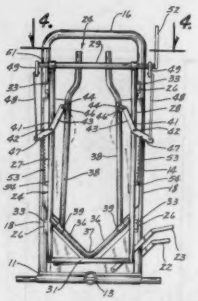
3,623,456

CHUTE GATE

Marvin J. Priefert, R.R. 1, Mt. Pleasant, Tex.

Filed July 2, 1970, Ser. No. 051,823
Int. Cl. A61d *03/00*
U.S. Cl. 119—98 **5 Claims**

The chute gate is attachable to a cattle chute that has a pair of animal-neck-engaging members supported on a main frame for simultaneous vertical movement and lateral movement toward and away from each other within the transverse



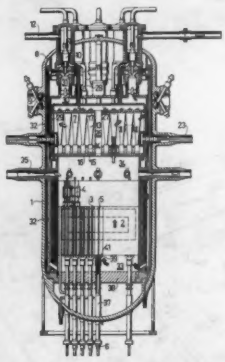
confines of the main frame. Movement of the neck-engaging members is accomplished through a manually operated lever system.

3,623,457

STEAM GENERATOR FOR GENERATING SATURATED STEAM FROM SUPERHEATED STEAM AND WATER

Karl Gunnar Dillstrom, Kallangsvagen, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed Aug. 15, 1969, Ser. No. 850,389
Int. Cl. F22b *1/08*
U.S. Cl. 122—31 **5 Claims**



A steam generator for generating saturated steam from superheated steam and water and having a plurality of nozzles which consist of a mixing portion and a flared atomizing portion adapted to atomize and vaporize respectively feed water fed to said nozzles, the arrangement of the nozzles being such that the nozzles are arranged vertically and that the widest portions of the flared vaporizing portions of the nozzles are contiguous to each other, to leave therebetween a space through which the generated saturated steam can leave the generator.

3,623,458

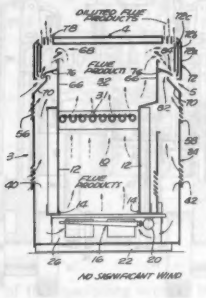
STACKLESS OUTDOOR HEATER ADAPTED FOR SWIMMING POOLS

Leo Block, Temple City, Calif., assignor to Raypak Company, Inc., El Monte, Calif.

Filed Nov. 6, 1969, Ser. No. 874,500
Int. Cl. F22b *15/00*; **F23j** *11/00*
U.S. Cl. 122—264 **17 Claims**

The invention is a heating appliance of the stackless type particularly adapted for heating swimming pool water. Openings are provided at the upper part of the appliance for admitting atmospheric air for combustion and allowing it to

mix with and dilute flue products before being discharged to keep the appliance cool. Around the upper part of the unit is a baffle member in the form of a collar preventing direct effect of wind velocity on the openings. The heater is provided with an air jacket with openings on one or more sides to admit air for combustion and to admit convection cooling air



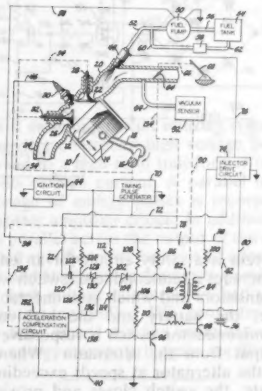
for keeping the unit cool. The openings are so arranged that when the unit is subjected to wind of various velocities the effect is to produce a controlled forced draft of combustion air which insures expelling the flue products from the unit. Baffling is provided to prevent access of driving rain into the flue products area and into the air jacket.

3,623,459

FUEL SUPPLY CONTROL SYSTEM HAVING ACCELERATION COMPENSATION

Colin C. Gordon, Cincinnati, Ohio, and Lester Wilkinson, Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 22, 1970, Ser. No. 039,720
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **6 Claims**



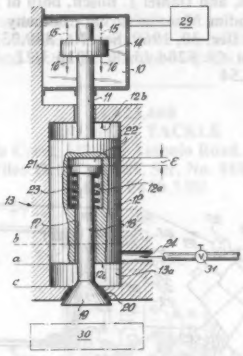
An electronic fuel injection control system for an internal combustion engine includes an acceleration compensation circuit for increasing the amount of fuel applied to the engine during acceleration. In the control system, control pulses are produced in response to the occurrence of trigger pulses. The trigger pulses are developed in synchronization with the operation of the engine. Fuel is applied to the engine at a constant rate for the duration of each of the control pulses. The duration of the control pulses is determined as a function of a bias voltage. During acceleration of the engine, the acceleration compensation circuit varies the bias voltage so as to increase the duration of the control pulses by a substantially constant amount during an initial time period and by a linearly decreasing amount during a subsequent time period. In addition, the acceleration compensation circuit develops an extra trigger pulse in response to the onset of acceleration. Further, the acceleration compensation circuit is completely insensitive to the contact bounce of a sensing switch which detects acceleration of the engine.

3,623,460

FUEL INJECTION VALVE FOR INTERNAL COMBUSTION ENGINES

Iwan Komaroff, Ludwigsburg; Hans Zeller, Doeffingen; Gerhard Haug, Stuttgart; Ulrich Streicher, Bamberg, and Walter Schlagmuller, Butthard, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 2, 1970, Ser. No. 015,437
Claims priority, application Germany, Feb. 28, 1969, P 19 10 114.5
Int. Cl. F02d *5/00*
U.S. Cl. 123—32 **9 Claims**



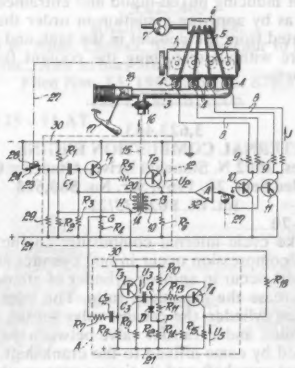
An injection valve which injects fuel directly into the inlet valve for a cylinder in an internal combustion engine comprises a piston which is reciprocable in the chamber of a cylinder member from a neutral position to a retracted position to thereby admit into the chamber a metered quantity of fuel, and thereupon from neutral to an extended position to thereby inject such quantity of fuel into the inlet valve. The piston is moved by an electromagnetic drive which receives signals from an electronic control circuit.

3,623,461

CONTROLLED FUEL INJECTION ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES

Friedrich Rabus, Hochdorf, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 3, 1969, Ser. No. 873,609
Int. Cl. F02b *3/10*
U.S. Cl. 123—32 EL **5 Claims**



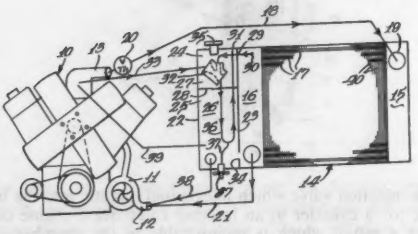
A fuel injection control arrangement for establishing the opening duration of electromagnetically actuated injection

valves in internal combustion engines. A control circuit generates the control voltage for varying the duration of pulses emitted by a monostable multivibrator which is actuated by a cam-operated switch driven from the crankshaft of the engine. The control voltage has a periodically varying waveform timed with respect to the pulses realized from the monostable multivibrator. Switching transistors within the control circuit are actuated upon expiration of a predetermined time delay after the terminations of the pulses from the multivibrator. One of the switching transistors is driven into saturation for generating a first time delay, and is subsequently operated in the nonsaturated region for generating a subsequent second time delay through which the predetermined opening duration of the valve is realized.

3,623,462
RADIATOR SYSTEM FOR INTERNAL COMBUSTION ENGINE

Joseph H. Anders, and Daniel J. Bosch, both of Racine, Wis., assignors to Modine Manufacturing Company

Filed Dec. 30, 1969, Ser. No. 889,033
Int. Cl. F28d *15/00;* **F01p** *3/22*
U.S. Cl. 123—41.54 **10 Claims**



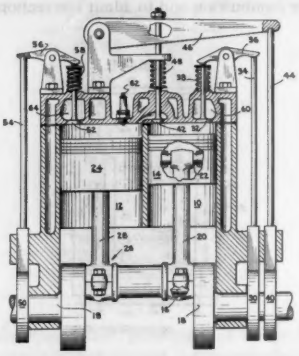
A liquid coolant radiator for the cooling system of a heat-generating engine and specifically an internal combustion engine with the radiator including an inlet header, an outlet header, tubes interconnecting the headers for flow of liquid in a flow path through the engine and radiator in which the radiator portion of the flow path includes the inlet header, tubes and outlet header, a tank for separating entrained gas such as air, leaked combustion gases and the like with the tank having a space for receiving the gas and from which the gas can then be vented to the atmosphere, a tube interconnecting the tank and the coolant flow path for diverting some of the coolant with the entrained gas into the tank and a fluid flow device for inducing mixed liquid and entrained gas flow into the tank as by applying a suction in order that the gas may be separated from the coolant in the tank and vented to the atmosphere without disturbing the coolant flow in the coolant flow path.

3,623,463
INTERNAL COMBUSTION ENGINE

Gerrit De Vries, 2902 N. Stonehill Drive, Altadena, Calif.

Filed Sept. 24, 1969, Ser. No. 860,515
Int. Cl. F02b *33/22*
U.S. Cl. 123—70 **9 Claims**

A four-stroke cycle internal combustion engine in which induction and compression occur in one cylinder and expansion and exhaust occur in another cylinder of greater volume to thereby increase the expansion ratio. The inlet valve for the compression cylinder, the exhaust valve for the expansion or power cylinder, and a transfer valve between the cylinders are all operated by cams affixed to the crankshaft, eliminating a half-speed camshaft and its timing gear or chain drive, whereby all four processes referred to occur in one revolution of the crankshaft rather than in two revolutions of same as in the conventional four-stroke Otto engine. Further optional features include an insulated piston in the power cylinder which effects further increase in efficiency and a heat exchanger for the compressed charge which utilizes ex-

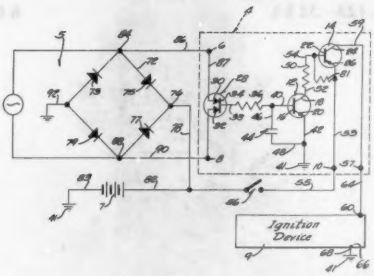


haust waste heat for effecting a still further increase in efficiency.

3,623,464
IGNITION SAFETY CIRCUIT

Bruce L. Patis, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed June 10, 1969, Ser. No. 831,840
Int. Cl. F02p *11/00*
U.S. Cl. 123—102 **5 Claims**



Disclosed herein is a safety circuit for an engine ignition system which includes a semiconductor switch which is in the form of two transistors and which is connectable to the engine alternator, the battery and the high-voltage power supply. The semiconductor switch is responsive to increases in current output from the alternator. When the engine starter rotates the alternator at speeds exceeding 50 revolutions per minute, the switch closes and provides a circuit path connecting the battery to the high-voltage power source to cause ignition voltages to start the engine.

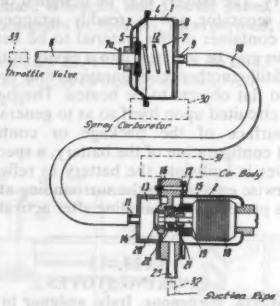
3,623,465
DEVICE FOR DELAYING THE CLOSING OF A THROTTLE VALVE

Erwin Wawrziniok, Ingolstadt, Germany, assignor to Auto Union GmbH, Ingolstadt, Germany

Filed May 24, 1968, Ser. No. 731,816
Claims priority, application Germany, July 25, 1967, A 56351
Int. Cl. F02d *11/08*
U.S. Cl. 123—103 C **1 Claim**

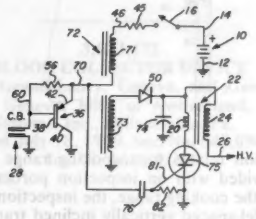
A device for delaying the closing of the throttle valve of an internal combustion engine having a spray carburetor and used for driving a car, has an operating section fixed to the

spray carburetor and a controlling section separated from the operating section and fixed to a part of the car body, the



operating space of the operating section being connected by a hose conduit with the interior of the controlling section.

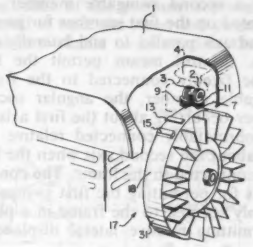
3,623,466
CURRENT TRANSFER ELECTRICAL SYSTEM
William F. Palmer, Lowell Road, Carlisle, Mass.
Continuation of application Ser. No. 707,000, Jan. 19, 1968, which is a continuation of application Ser. No. 501,436, Oct. 22, 1965. This application Aug. 6, 1969, Ser. No. 853,586
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 **4 Claims**



An electrical switching circuit utilizing transistorized components in contact controlled high voltage pulse generation which is applied to a high-ratio transformer through a diode which prevents reverse current. A parallel inductance provides for storage of energy pulses is incorporated directly with the transistor amplifier circuit. In addition a capacitor is connected in parallel across the output of the diode and a silicon controlled rectifier may be serially connected between the capacitor and step-up transformer to provide a capacitor-discharge or high voltage converter. A half-wave as well as full wave contact controlled DC converter together with trigger pulse delay means and any combination thereof using the inductive energy storage principles are disclosed.

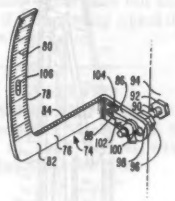
3,623,467
TRIGGERING MAGNET AND COIL ASSEMBLY FOR USE WITH AN IGNITION SYSTEM INCLUDING A PERMANENT MAGNET ALTERNATOR
Michael J. Piteo, Enfield, Conn., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.
Filed Nov. 24, 1969, Ser. No. 879,422
Int. Cl. F02p *1/02*
U.S. Cl. 123—149 D **10 Claims**

A triggering magnet and coil assembly for use with a permanent magnet alternator and ignition system a a spark-ignited engine is disclosed. The ignition system includes a condenser discharge circuit using a silicon-controlled rectifier for controlling the charging and discharging of a condenser; the condenser when discharged being discharged through the primary winding of a step-up transformer having its secondary winding connected to the spark plug of the engine. Triggering signals for the silicon-controlled rectifier are provided by the triggering magnet and coil assembly. The triggering



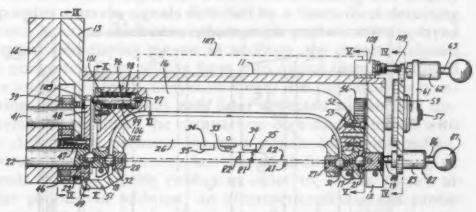
magnet and coil assembly includes a core and two coils arranged and connected to minimize the effect of the leakage field established by the permanent magnets of the alternator.

3,623,468
ARCHERY TACKLE
Robert Neville Crest, 327 San Antonio Road, Arcadia, Calif.
Filed Oct. 23, 1969, Ser. No. 868,797
Int. Cl. F41b *5/00*
U.S. Cl. 124—24 **5 Claims**



Improved archery tackle is provided which comprises, in combination, an archery longbow and an archery bow arm guard and positioner device, preferably releasably connected to said bow. The device includes a transverse portion, a rearwardly extending spacer portion and a generally vertical arm guard portion positionable between the archer's bow arm and the bow string and being integral portions of a single bendable rod. The device may include bubble level(s) and/or distance-measuring indicia to indicate contact points of the bow arm therewith and brace height.

3,623,469
RADIUS DRESSER
Raymond W. Niles, Chelsea, Mich., assignor to Industrial Tectonics, Inc., Ann Arbor, Mich.
Filed Nov. 13, 1969, Ser. No. 876,317
Int. Cl. B24b *53/06*
U.S. Cl. 125—11 AT **14 Claims**



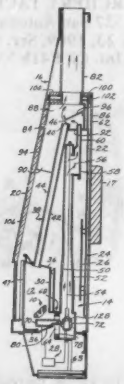
A radius dresser for generating a profile having arcuate portions generated about different centers and/or different

radii of rotation. The dresser includes a first swingable member mounted on a frame for pivotal movement about a first axis and a second swingable member, having a tool thereon, mounted on the first member for pivotal movement about a second axis parallel to and laterally displaced from the first axis. Control means permit the first swingable member to be fixedly connected to the frame or to the second swingable member, the angular oscillation of the second member occurring about the first axis when the first member is nonrotatably connected relative to the second member and about the second axis when the first member is nonrotatably connected to the frame. The control means also include means for permitting the first swingable member to be nonrotatably secured to the frame in a plurality of positions for permitting relative lateral displacement between said axes.

3,623,470
GAS FIREPLACE

Murray O. Wilhoite, Nashville, Tenn., assignor to Temco, Inc., Nashville, Tenn.

Filed Mar. 2, 1970, Ser. No. 15,794
Int. Cl. F24c *3/00*
U.S. Cl. 126—121 **8 Claims**

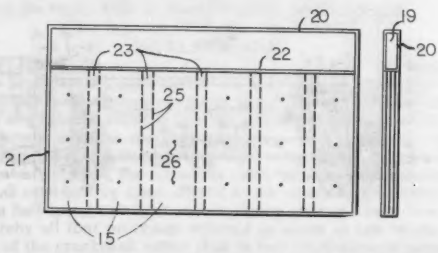


A wall-mounted, gas-fired fireplace unit includes a decorative simulated-log gas burner and a gas-fired, room-heating unit disposed behind the logs within a common decorative cabinet. Room air passes in heat exchange relationship with the exterior of the heating unit, while hot combustion products from the log burner are directly vented to avoid heating room air. A manually operable control system permits the log burner and heating unit to be used separately or together.

3,623,471
WRAPAROUND BATTERY AND HEATER

John C. Bogue, 1036 S. 1st St., Santa Monica, Calif., and Robert I. Sarbacher, 101 Ocean Ave., Arcadia, Calif.

Filed Dec. 15, 1969, Ser. No. 885,261
Int. Cl. F24j *3/00*
U.S. Cl. 126—263 **12 Claims**

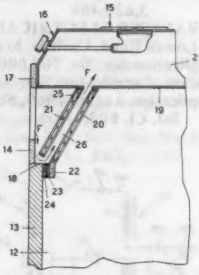


A reserve battery acting as a heating element is designed for heating the contents of a food package or container. The battery is energized at the time the contents are to be heated by releasing the electrolyte into the electrode compartment of the battery. The battery may be designed of flexible electrodes and separator and is readily wrapped around the package or container of the material to be heated. Another configuration may be inserted into a cavity in the package or container. Still another configuration may be sandwiched between two flat objects to be heated. The battery is effectively short circuited upon itself so as to generate heat evenly over the surface of the package or container. In the wraparound configuration of the battery, a special flexible insulating cover is built into the battery to reflect heat which would otherwise escape into the surrounding atmosphere and also provide protection in handling after activation.

3,623,472
COOKING STOVES

Lamberto Mazza, Pordenone, Italy, assignor to Becchi S.p.A., Forli, Italy

Filed Nov. 25, 1969, Ser. No. 879,820
Claims priority, application Italy, Nov. 28, 1968, 10603
Int. Cl. A21b *1/00*; **F24c** *15/04*
U.S. Cl. 126—273 **1 Claim**

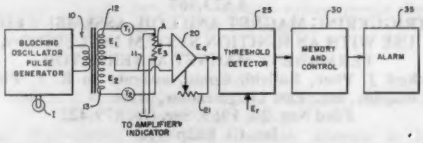


The invention relates to a cooking range with an oven which is provided with an inspection port adjacent a top front edge of the cooking range, the inspection port comprising two parallel-spaced vertically inclined transparent panes between which a passage is defined. Cooling air enters said passage from an inlet in the front of the cooking range and gets vented into the bottom region of the cooking top of the range. The transparent panes can be viewed to see the inside of the oven by a person standing in an upright position.

3,623,473
METHOD FOR DETERMINING THE ADEQUACY OF BLOOD CIRCULATION IN A LIVING BODY

Harold W. Andersen, and Charles H. Harrison, both of Oyster Bay, N.Y., assignors to H. W. Andersen Products, Inc., Oyster Bay, N.Y.

Filed Jan. 6, 1969, Ser. No. 789,255
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 R **5 Claims**

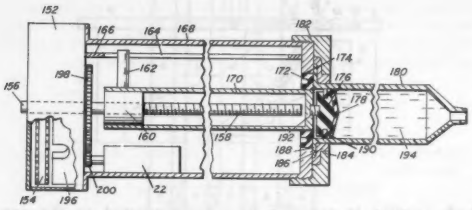


A method for determining the adequacy of blood circulation in a human or animal body by measuring the difference in temperature between at least two suitable points by means of two temperature-sensitive elements excited by voltages of predetermined magnitude and phase, including a reference voltage for comparing the pulses derived from the temperature-sensitive elements and providing for an indication at a signal level different from a threshold level.

3,623,474
ANGIOGRAPHIC INJECTION EQUIPMENT

Marlin S. Heilman, Gibsonia, and Donald Jones, Pittsburgh, both of Pa., assignors to Medrad, Incorporated, Pittsburgh, Pa.

Filed July 25, 1966, Ser. No. 567,643
Int. Cl. A61b *06/00;* **A61m** *05/20*
U.S. Cl. 128—2 R **24 Claims**

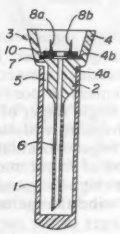


An angiographic injector system for producing a controlled rate of flow of injection fluid is described. The injector has a motor-driven piston for ejecting fluid from a syringe cartridge contained within a pressure jacket. The drive motor is operated in accordance with a command voltage which is proportional to the desired rate of flow. Sensing means detects the actual rate of flow and comparison means provides an error signal which controls the motor. Compensating means allow a single control system to operate the drive motor in conjunction with syringes of various sizes, and a tripping circuit halts the motor if the flow rate exceeds the selected rate.

3,623,475
BLOOD COLLECTOR DEVICE

Manuel Sanz, Grand-Lancy, Geneva, and Georges Revillet, Petit-Lancy, Geneva, both of Switzerland, assignors to Micromedic Systems, Inc., Philadelphia, Pa.

Filed July 18, 1969, Ser. No. 843,096
Int. Cl. A61b *5/14*
U.S. Cl. 128—2 R **8 Claims**



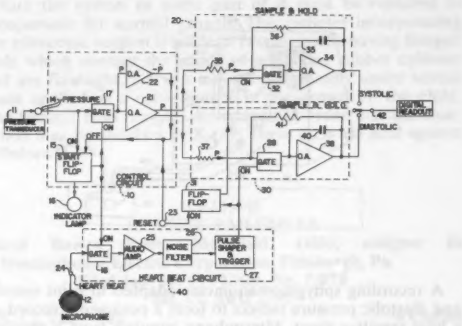
A tube for use in the automatic collection of a digital blood sample has its mouth fitted with a resilient detachable funnel member which can carry a capillary cannula and in which is held an absorbent annular plug through which pass and project two incisor lancets.

3,623,476
BLOOD PRESSURE MEASUREMENT APPARATUS

Jean J. A. Robillard, Waltham, Mass., assignor to Philips Corporation, New York, N.Y.

Continuation of application Ser. No. 488,579, Sept. 20, 1965, now abandoned. This application Feb. 16, 1970, Ser. No. 10,080
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 M **11 Claims**

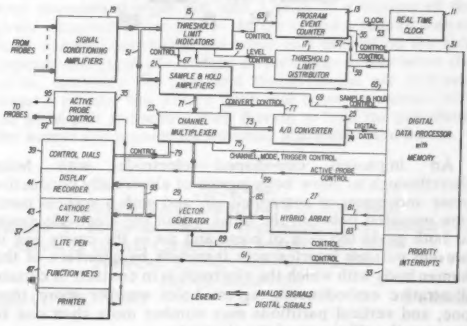
Blood pressure measurement apparatus is disclosed wherein pressure may be applied externally to an artery, such pressure being measured by a continuously variable parameter of an electrical signal. Heartbeat sound-detecting apparatus is coupled to signal the onset and the cessation of heartbeat sounds as the pressure on the artery is being diminished. The value of the pressure representative signal parameter is stored at both the onset and cessation of heartbeat sounds and is available to be read as the systolic and diastolic blood pressure, respectively. A control circuit responsive to the pressure signal prevents operation of the apparatus if the pressure signal does not exceed the value of occlusion pressure or if the pressure signal decreases at a rate exceeding a predetermined value.



3,623,477
BIOMEDICAL SENSING AND DISPLAY APPARATUS

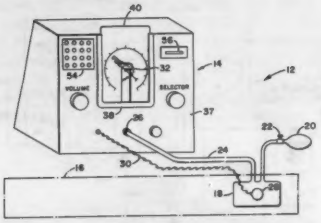
Robert L. Trent, 50 Front St., Marblehead, Mass.

Filed Apr. 15, 1969, Ser. No. 816,215
Int. Cl. A61b *5/00*
U.S. Cl. 128—2.1 B **16 Claims**



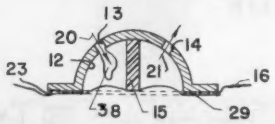
This disclosure describes a biomedical sensing and display apparatus wherein signals detected by a biomedical detecting means, such as electroencephalograph probes, are displayed on a suitable display means. In addition, the detected signals are converted from analog form into digital form and stored in a memory. Electrical system means are provided for comparing the stored signal with later detected signals and displaying the results of the comparison on a display means with the differences between the two signals being intensified. Further, electrical means are provided for applying active signals to some of the probes in order to invoke signals at other probes. In addition, an electroencephalograph probe housing wherein a plurality of probes are mounted in a semihemispherical structure is described. The housing houses microelectronic preamplifier means that are connected to the probes and includes a shielding means to prevent extraneous signals from disturbing the signals detected by the probes.

3,623,478
RECORDING SPHYGMOMANOMETER
Joseph M. Saba, Wayland, Mass., assignor to Technical Resources, Inc., Waltham, Mass.
Filed Dec. 19, 1969, Ser. No. 888,200
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 Q 4 Claims



A recording sphygmomanometer adapted to print systolic and diastolic pressure indicia to form a permanent record on a heat sensitive sheet. Microphone impulses from a pressure cuff are amplified to produce current in a heating element mounted on the pointer of a manometer. The record sheet may have a printed scale adjacent the heating element and accurately positioned in relation thereto.

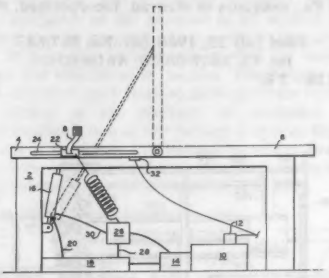
3,623,479
ECG ELECTRODE WITH PARTITION
Christopher C. Day, Newtonville, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Nov. 21, 1969, Ser. No. 878,740
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 E 6 Claims



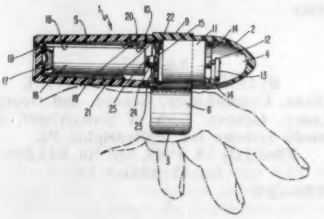
An improved cup-shaped electrode with holes therethrough to allow both ingress of electrically conductive paste and egress of entrapped air, and with a vertical partition mounted between the holes within the electrode cavity to both guide the flow of paste and air in the cavity and to prevent possible interferences therewith by a surface of the human body with which the electrode is in contact. In certain illustrative embodiments, egress holes number more than one, and vertical partitions may number more than one to improve the efficiency of the electrode.

3,623,480
BODY-MANIPULATING APPARATUS
Robert F. Chisolm, c/o F. L. Hart, 1206 May Lane, Bartlesville, Okla.
Filed July 30, 1970, Ser. No. 59,556
Int. Cl. A61h 1/02
U.S. Cl. 128—25 9 Claims

An individual's body-manipulating apparatus has first and second pivotally connected, body-supporting elements with the first element being movable between a first position at which the elements are in a common, substantially horizontal plane and a second position at which the first element is angularly disposed relative to the second element. A power and controlling means is attached to the first body-supporting element on which the portion of the person's body to be manipulated is secured. The controlling means is operably connected to the power means for actuation of the power means and movement of the first element and the individual's body portion in response to a force exerted on the controlling means.



3,623,481
GUM MASSAGE IMPLEMENT AND METHOD OF FINGER MASSAGING GUMS
William S. Curran, 14 N. Chatsworth Ave., Larchmont, N.Y.
Filed July 30, 1970, Ser. No. 59,658
Int. Cl. A61h 1/00
U.S. Cl. 128—36 17 Claims

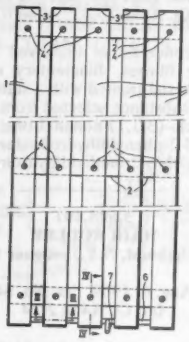


Gum massage implement comprising a portable self-contained vibration-generating member, in combination with a single finger engaging retainer connected with said member for retaining such implement in positive constant finger engaging disposition on a single finger of the user rearwardly of the tip of the finger to transmit vibrations from such member to the finger for single finger vibration massage of the gums; and concomitant method of finger massaging gums by transmitting low amplitude high-frequency vibrations from a portable self-contained vibration-generating external source to a single massaging finger of the user rearwardly of the tip of the finger and placing the resulting vibrating finger in direct contact with a portion of the gums to massage such portion by imparting in turn the force of such vibrations thereto.

3,623,482
GAS-PERCOLATING DEVICE FOR THERAPEUTIC BATH TREATMENTS
Hans Schmidt, Bad Mingolsheim, and Alfons Oestreicher, Helmsheim, both of Germany, assignors to Hans Schmidt jun, Bad Mingolsheim, Germany
Filed Nov. 13, 1969, Ser. No. 876,230
Claims priority, application Germany, Nov. 22, 1968, G 68 08 094.4
Int. Cl. A61h 9/00
U.S. Cl. 128—66 10 Claims

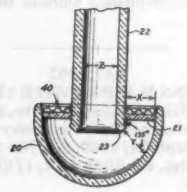
A device for passing a treatment gas into a bathtub or similar container consisting of a grate of plastic at least the upper grate boards of which have a hollow cross section to serve as gas-conducting chambers for passing the treatment gas to and through nozzle openings which are provided in the

sidewalls of the adjacent upper grate boards facing each other. The gas may be conducted from a gas source under pressure to the individual upper grate boards either through a



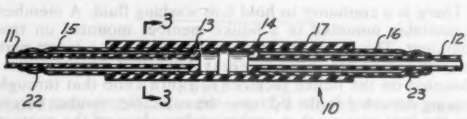
pipe which is connected to all of the upper boards or through one of the lower cross boards which likewise has a hollow cross section and is connected by resilient plugs with axial bores to each of the upper boards.

3,623,483
AUTOTRANSFUSOR ATRAUMATIC SUCTION TIP
Richard H. Dyer, Jr., Havertown, Pa., assignor to Trustees of the University of Pennsylvania
Filed July 23, 1969, Ser. No. 843,926
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 **4 Claims**



A suction tip for use in the smooth, atraumatic withdrawal of blood from a surgical field which comprises a semispherical reservoir and a single orifice, flared catheter which projects into the reservoir and is attached thereto by means of a plurality of struts bridging the interior surface of the reservoir and the exterior surface of the catheter.

3,623,484
TELESCOPING SHUNT SYSTEM FOR PHYSIOLOGICAL FLUID
Rudolf R. Schulte, 3328 Calle Fresno, Santa Barbara, Calif.
Filed July 22, 1969, Ser. No. 843,517
Int. Cl. A61m *27/00*
U.S. Cl. 128—350 R **9 Claims**



This invention relates to an auxiliary device for use with and in physiological shunt circuits for the drainage of unwanted fluids from one part of the body to another. According to this invention a telescopic section is incorporated into a shunt catheter so that when one end of the system is implanted in an area of the body to be drained (such as the ventricles of the brain) and the other end of the system is implanted in a portion of the body into which the fluid must be drained (such as the heart), then, when there is bodily growth which would require elongation of the system, the telescopic portion will elongate and thus prolong the period before the system or some part of it must be replaced to compensate for normal growth. The catheter incorporating the telescopic section is made in two segments having flanged ends which contact the inside of a silicone rubber cylinder and are fluidtight, but can move longitudinally under tensile loads applied as a consequence of the growth of the child. The flanged ends may be radiopaque in order that the elongation may be checked by X-ray. These ends are held against withdrawal.

3,623,485
HEATING PAD COVER
David Bowen Price, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 30, 1970, Ser. No. 7,078
Int. Cl. A61f *7/00*
U.S. Cl. 128—402 **4 Claims**

A fabric cover for a heating pad having an exposed surface of the cover comprising a fabric with a nap of loose closed loop nonmatting plush pile and a strap or extension of the cover, attached at one end to the cover and a strip of Velcro hook material secured at the other end thereof on the side opposite the plush pile surface of the cover so that when the cover, enclosing the pad, and the extension are wrapped about a person, the Velcro hook will come in contact with the plush pile and secure itself thereto to hold the pad about the wearer and provide for infinitely adjustable attachment.

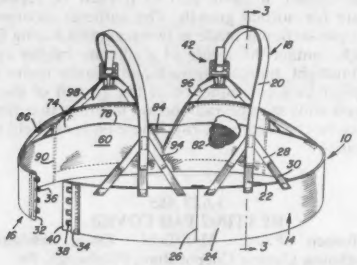
3,623,486
DOUBLE RATE DEMAND PACEMAKER
Barouh V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Oct. 1, 1969, Ser. No. 862,695
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **8 Claims**

A double rate demand pacer having a bistable magnetic reed switch connected to an RC charging circuit for selectively short-circuiting one of two series-connected resistors. The pacer can be switched between two rates dependent upon the polarity of a magnetic pole brought into its vicinity. A monostable magnetic reed switch is also incorporated in the circuit. A magnetic field of either polarity operates the monostable magnetic reed switch to place the pacer in the continuous mode; as soon as the magnetic field is removed, the pacer reverts to the demand mode with the rate being determined by the polarity of the last-applied magnetic field.

3,623,487
BRASSIERE WITH ADJUSTABLE STRAPS AND CUP SUPPORT

Winton C. Chiu, 1901 E. 23rd St., Oakland, Calif.

Filed Jan. 17, 1969, Ser. No. 791,998
Int. Cl. A41c *3/10*; A41d *25/16*
U.S. Cl. 128—467 4 Claims

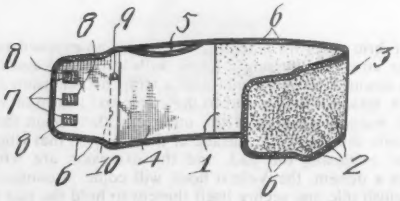


A garment construction employing features incorporated into various garments such as brassieres, swimsuits, dresses, nightgowns, athletic supports for men and the like with the features including a novel buckle structure, adjustable supporting straps, reinforcing cups and a rearrangement of detachable fasteners to facilitate use of the garment.

3,623,488
BELLY-BAND

Takeo Nakayama, 11, 19, 5-chome Minami-senju, Arakawa-ku, Tokyo, Japan

Filed Aug. 15, 1969, Ser. No. 850,581
Int. Cl. A41c *1/00*
U.S. Cl. 128—549 8 Claims



A belly-band having a main body formed of a relatively thin rubberized web, a piled rubberized relatively thick textured member adhered to one side of the main body having the same configuration as the main body. The main body and textured member are sewed together along their peripheral edges. Synthetic resin hook pieces are sewed to the other side of the main body, and have bristles on their exposed sides whereby when the band is applied on the belly of a person the piles of the textured member may be interlocked with the bristles of the hook pieces to maintain the belly-band on the belly in a stabilized state.

3,623,489
TOBACCO SMOKING ARTICLE

Alton DeWitt Quinn, Cranford, N.J., assignor to International Flavors & Fragrances, Inc., New York, N.Y.

Filed Nov. 18, 1969, Ser. No. 877,820
Int. Cl. A24b *15/04*
U.S. Cl. 131—9 4 Claims

The formation of a shredded tobacco material having intimately mixed therewith a microencapsulated synthetic clove flavoring material wherein the capsules are of such a size as to create an audible crackling sound when burned and the incorporation thereof into smoking articles such as cigarettes, cigars, etc. The capsules may also contain a tobacco flavor enhancer.

3,623,490
TOBACCO-SMOKE FILTERS

Thomas William Charles Tolman, Eastleigh, England, assignor to Brown and Williamson Tobacco Corporation, Louisville, Ky.

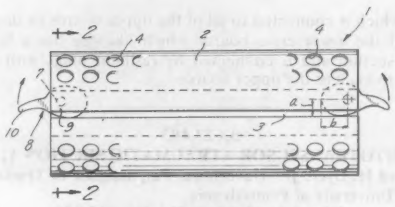
Filed Dec. 15, 1969, Ser. No. 885,275
Int. Cl. A24b *15/02*; A24d *01/06*
U.S. Cl. 131—267 2 Claims

The invention concerns an improved filter for tobacco smoke comprising fibrous, filamentary or sheet tobacco-smoke filtering material treated with a stable, involatile, free-radical containing substance selected from the group consisting of 9-oxyl-bicyclo-(3,3,1)-nonan-3-one; 1-nitronyl-3-oxyl-4,4,5,5-tetramethyl-2-phenyldihydroimidazole; and 1-oxyl-3-nitronyl-4,5-phenanthro-2-methyldihydroimidazole.

3,623,491
HAIR ROLLER

William Garrett, Elmhurst, N.Y., assignor to Flairescene Ltd., New York, N.Y.

Filed Aug. 6, 1969, Ser. No. 847,830
Int. Cl. A45d *2/24*
U.S. Cl. 132—39 7 Claims

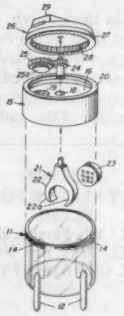


A hair roller which is circumferentially expandable in order to stretch a lock of wound hair, with the expansion of the roller being accomplished without the aid of additional tools.

3,623,492
CONTACT LENS WASHER WITH LENS STORAGE

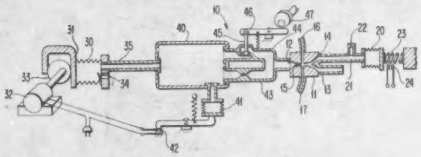
Dolph G. Frantz, 3212 Dorchester Drive, and William Joseph, 3719 Berkley Drive, both of Montgomery, Ala.

Filed Sept. 24, 1969, Ser. No. 860,742
Int. Cl. B08b *3/04*, *11/02*
U.S. Cl. 134—143 3 Claims



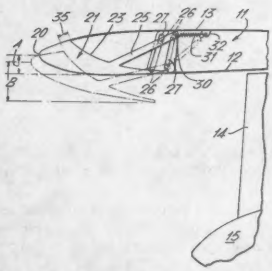
There is a container to hold lens washing fluid. A member is rotatably mounted in a lidlike member mounted on this container. This rotatably mounted member has a lower part that removably receives a perforated case for a contact lens. Mounted on the lidlike member is a turn knob that through gearing mounted in the lid turns the rotatable member carrying the lens case so that washing takes place of the contact lens carried in the perforated case. The container has spaced-apart depending legs between which a lens case carrier may be stored. The turn knob has two compartments with hinged tops for storage of right and left contact lenses.

3,623,493
METHOD AND SYSTEM FOR OPERATING FLUID LOGIC DEVICES
Meredith A. Hunter, Versailles, and Richard E. Languell, Lexington, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 1, 1969, Ser. No. 838,111
Int. Cl. F15c *1/10*; F17d *3/00*
U.S. Cl. 137—2 13 Claims



A bistable pure fluid jet logic device is operated at low primary flow levels for efficiently performing information storage functions including switching and data retention, and is operated at substantially greater primary flow level for generating substantial work output without jeopardizing the information stored.

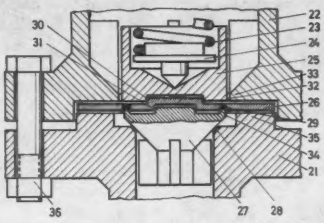
3,623,494
AIR INTAKES FOR GAS TURBINE ENGINES
Michael Poucher, Duffield, England, assignor to Rolls-Royce Limited, Derby, England
Filed Oct. 2, 1970, Ser. No. 77,638
Claims priority, application Great Britain, Oct. 3, 1969, 48,809/69
Int. Cl. F02b *27/02*; F02r *11/00*
U.S. Cl. 137—15.2 8 Claims



The invention concerns an air intake for a gas turbine engine including an upstream lip which is movable relative to a fixed pod member, displaceable pressure-responsive means associated with the said lip and subjected to opposing forces respectively due to the static pressure within the said intake and to ambient air pressure, the displacement of said pressure-responsive means causing movement of said lip to vary the contraction ratio of the said intake automatically and solely in response to the relative magnitudes of said pressures.

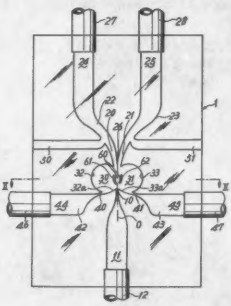
3,623,495
PRESSURE-RELIEF VALVE AND DIAPHRAGM FOR SUCH VALVE
Karl Friedrich Erb, Demollstrasse 3, 8 Munich 19, Germany
Filed Nov. 2, 1967, Ser. No. 680,137
Int. Cl. F16k *17/16*
U.S. Cl. 137—69 4 Claims

According to the invention the present pressure relief or safety valve comprises a diaphragm having an oversized thickness but with a groove in such a diaphragm to facilitate the rupture of the diaphragm. The valve may be equipped



with upper and/or lower grooving means for pressing or cutting such groove into the diaphragm.

3,623,496
FLUID AMPLIFIER WITH SATURATION CHARACTERISTIC
Minoru Kawabata, Chita, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Asahi-machi, Kariya-shi, Aichi-ken, Japan
Filed Feb. 20, 1970, Ser. No. 12,929
Claims priority, application Japan, Feb. 28, 1969, 44/15738
Int. Cl. F15c *1/14*, *1/16*
U.S. Cl. 137—81.5 6 Claims

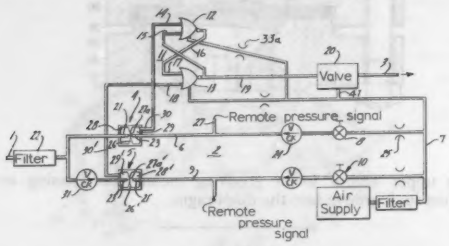


A fluid amplifier with a saturation characteristic, the amplifier consisting of a main fluid inlet conduit supplied with a fluid to be controlled, a plurality of fluid flow outlet conduits disposed downstream of the main fluid inlet conduit at a predetermined distance to receive the controlled flow from the main inlet conduit, a vortex chamber between the main fluid inlet conduit and the fluid flow outlet conduit for producing vortex flow, control fluid inlet nozzles directed into said vortex chamber in the same direction as the vortex flow and supplied with control flow fluid for acting on the vortex flow to control the deflection of the fluid from the main fluid inlet conduit, and airfoillike elements positioned within the vortex chamber in alignment with the fluid flow from the main inlet conduit for limiting the deflection of the fluid flow from the main fluid inlet conduit to maintain a saturated condition of deflected main fluid flow.

3,623,497
FLUIDIC SWITCH
Donald L. Kaske, Waukesha, Wis., assignor to Johnson Service Company, Milwaukee, Wis.
Filed Dec. 8, 1969, Ser. No. 882,964
Int. Cl. F15c *1/12*
U.S. Cl. 137—81.5 10 Claims

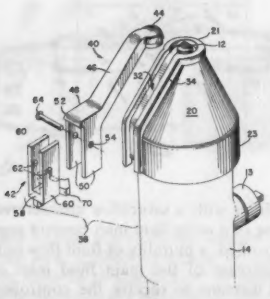
A fluidic differential switch includes a pair of summing impact modulators each having opposed nozzles referred to as

independent and dependent nozzles for reference purposes. The summing impact modulators are reversely connected with respect to a signal input and a reference input. Thus, the outputs of the modulators are connected to a pair of fluidic "Nor" gates, each of which has a pair of input signal means



controlling a main signal stream. The one input for each of the fluidic "Nor" gates is interconnected to a modulator and the other input is interconnected to the output of the opposite "Nor" gate. The switch output is taken from one of the "Nor" gates.

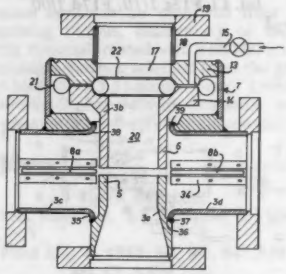
3,623,498
HYDRANT GUARD
Gerald J. Manahan, West Orange, and Otto A. Hoeckel, Lake Hiawatha, both of N.J., assignors to United States Pipe and Foundry Company
Filed May 25, 1970, Ser. No. 40,007
Int. Cl. F16k *35/12*
U.S. Cl. 137—296 **9 Claims**



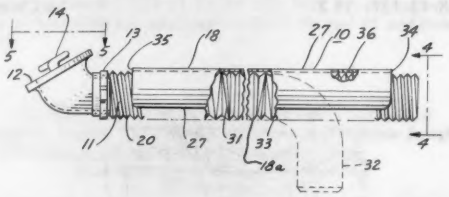
The present invention relates to a tamperproof hydrant assembly comprising a hydrant having a barrel; a bonnet attached to the barrel and having a hollow top portion extending above and about the operating nut of the hydrant, a skirt portion extending about the bottom thereof and spaced from the barrel, and a groove on the exterior of the bonnet; and locking means comprising strap means seated in the bonnet groove and extending downwardly from the hollow top portion of the bonnet and clamp means removably attached to said strap means and adapted to interlock with the bonnet skirt.

3,623,499
STOP VALVES
Rene Bernard, 15 Avenue Berthelat, Lyon 7,(Rhone), France
Filed June 26, 1969, Ser. No. 836,804
Claims priority, application France, Feb. 7, 1968, 3523
Int. Cl. F16k *3/10, 43/00*
U.S. Cl. 137—329.01 **13 Claims**

A stop valve of the kind including a valve seat and a pair of movable blocking discs selectively movable into position on a valve seat wherein at least one closable opening is provided to enable one disc to be withdrawn therethrough when the other is urged against the seat. The valve body may be of cruciform shape formed of thin-walled tubes which are welded together and a piston may be provided to urge either or each disc against the seat.

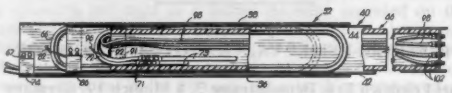


3,623,500
FLUID CONDUIT CONTROL
Donald D. Hoy, P.O. Box 197, Highland, Mich.
Filed Dec. 29, 1969, Ser. No. 888,619
Int. Cl. B05b *9/02*
U.S. Cl. 137—344 **3 Claims**



My invention provides a selectively adjustable, flexible, expandable and rigid fluid conduit control for aboveground carrying off of fluids, liquids or other matter. The device may be connected to portable houses such as travel trailers, campers, truck campers, or motor homes for carrying off liquids or other waste matter from such houses.

3,623,501
CONTINUOUS HYDRAULIC HOSE STRUCTURE FOR TELESCOPIC BOOM ASSEMBLY
James J. Reimbold, Overland Park, Kans., assignor to A. B. Chance Company, Centralia, Mo.
Filed July 13, 1970, Ser. No. 54,287
Int. Cl. B65h *75/36*
U.S. Cl. 137—355.17 **12 Claims**



A telescopic boom assembly having stacked hydraulic hose structure disposed in configuration in the assembly and

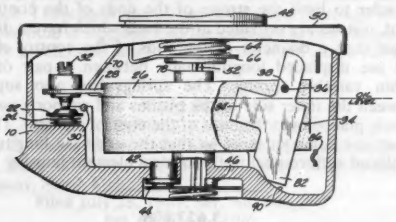
mounted for removal therefrom as a unit. The hose package is adapted for use on extensible boom structure having at least a pair of telescoping boom sections provided with a fluid-actuated extension cylinder and a source of pressurized fluid for operating the same. A plurality of elongated conduit means, each of which is provided with a fluid-conveying passage, are mechanically interconnected in vertically stacked relationship to present a continuous conduit assembly presenting a plurality of separate passages in superimposed relationship. The conduit assembly is constructed and arranged in the boom structure in disposition to prevent flexing thereof in a vertical plane, and clamp means readily accessible from one end of the boom structure secures the conduit assembly to the boom sections in a serpentine, closed loop configuration with the individual loops thereof lying in generally horizontal planes and confined by the sidewalls of a corresponding boom section to preclude kinking of the conduits during extension and retraction of the boom sections and consequent folding and unfolding of the looped portions of the conduits. Appropriate coupling means secure opposite ends of the conduits to the cylinder and the fluid source respectively. A second conduit assembly having a plurality of conduits presenting hydraulic fluid-conveying passages also disposed in vertically stacked, superimposed relationship is normally placed side-by-side with the first conduit assembly to deliver fluid to the outer end of the outermost movable boom section for operating controls or power tools. The second conduit assembly is normally provided with at least four superimposed conduits disposed in vertically stacked, continuous, serpentine loop configuration and secured by appropriate clamps in the same manner as the first-mentioned conduit assembly.

3,623,502

SAFETY FLOAT FOR OIL CONTROL VALVE

Harry L. Giwosky, Milwaukee, Wis., assignor to Controls Company of America, Melrose Park, Ill.

Filed July 6, 1970, Ser. No. 52,602
Int. Cl. F16k *31/28*
U.S. Cl. 137—400 **9 Claims**



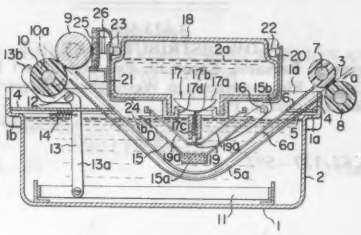
The pivoted main float acts on the inlet valve to regulate flow into the float chamber to maintain a constant level. The auxiliary float carried by the main float has its center of buoyancy under normal conditions located at CB_1, which is to the right of the pivot for the auxiliary float and, as such, merely adds its buoyance to that main float. If the inlet valve should leak, the oil level in the chamber rises and starts to float the other arm of the auxiliary float, causing the center of buoyancy to shift to CB_2, which will cause the auxiliary float to exert additional force on the inlet valve in the closing direction and will also swing the auxiliary float to a position blocking return of the float to the normal position until manually reset. The manually operated knob regulates rotation of the metering disc to control the flow rate through the outlet. The undulating surface engaged by the rollers is a detent mechanism cooperating with the metering disc and knob to index the metering disc and knob to their various operative positions.

3,623,503

DEVELOPING LIQUID FEED DEVICE FOR WET PROCESS ELECTROPHOTOGRAPHIC APPARATUS

Shigeru Suzuki, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1970, Ser. No. 31,629
Claims priority, application Japan, Apr. 25, 1969, 44/32510
Int. Cl. G05d *9/00*
U.S. Cl. 137—454 **4 Claims**



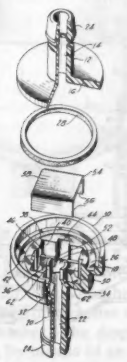
A developing liquid feed device to be used in a wet process electrophotographic apparatus for feeding a developing liquid having a toner concentration higher than that of the developing solution in the main developing chamber, comprising a developing liquid feed storage tank having a normally closed valve therein which valve is opened by appropriate means when the tank is mounted upon the main developing chamber permitting the developing liquid therein to be metered into the main developing solution. A premix chamber is floated in the main developing solution beneath the valve in the storage tank to receive the developing liquid passing therethrough. This premix chamber is provided with means for exerting a buoyant force sufficient to overcome the head of the developing liquid and thus maintains the uppermost edge of the premix chamber above the level of the developing solution. When the developing solution is at a predetermined level, the developing liquid in the premix chamber closes off the valve so that there is no metering of the developing liquid from the storage tank, but when the solution drops below the predetermined level, the concurrent dropping of the premix chamber opens the valve, permitting developing liquid to pass through the premix chamber into the main developing chamber until the solution is again raised to the predetermined level.

3,623,504

CHECK VALVE ASSEMBLY

Joseph W. Davis, Springfield, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Apr. 14, 1970, Ser. No. 28,305
Int. Cl. F16k *15/14*
U.S. Cl. 137—525 **11 Claims**



The following specification describes a check valve assembly in which a plural-sided interconnecting passageway is

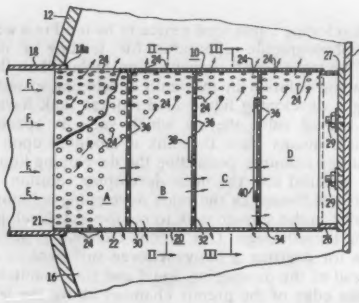
provided between passageways in adjacent couplings. A flexible rectangular diaphragm longer than the distance between two of the sides in the interconnecting passageway is deposited between the two sides so that the diaphragm is bent into a loop or U with the backwall adapted to move against or from the end of one coupling passageway to close or open the same. A stop in the interconnecting passageway prevents excessive inward bending or movement of the diaphragm.

3,623,505

FLOW DISTRIBUTION DEVICE

Eugene J. Barsness, Broomall, Pa., and Stuart P. Simpson, Tampa, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1969, Ser. No. 851,550
Int. Cl. F17c *13/00*
U.S. Cl. 137—592 **5 Claims**



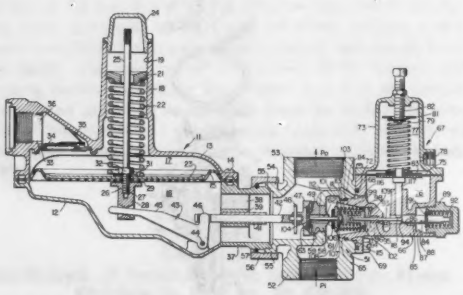
A duct of axially elongated tubular shape having a plurality of outlet openings in its tubular wall and a series of perforated partitions of varying flow resistance along the length of the duct. The partitions add pressure drop to fluid flow therethrough to counteract the changing fluid momentum in the duct as fluid is bled from the outlet openings, thereby giving uniformly distributed flow through the outlets with lower pressure loss than heretofore.

3,623,506

SERVICE REGULATOR WITH HIGH-LOW PRESSURE CUTOFF DEVICE

Joseph A. Bonner, Pittsburgh, and Howard J. Evans, New Kensington, both of Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed Sept. 22, 1969, Ser. No. 859,712
Int. Cl. F16k *17/22*
U.S. Cl. 137—613 **17 Claims**



A gas pressure regulator comprises a body having an inlet and an outlet and internal opposed annular valve seats surrounding a flow passage. A main diaphragm controlled valve assembly responsive to downstream gas pressure has a valve head adapted to be located relative to one valve seat to normally provide a substantially constant downstream pressure. A cutoff valve assembly at the other side of said wall comprises a movably mounted valve member adapted to engage the other valve seat.

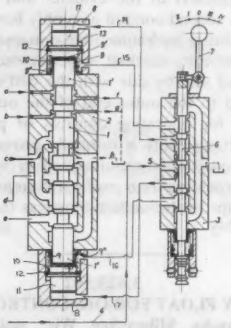
Independent mechanisms are provided for automatic spring powered movement of said cutoff valve member to closed position when the downstream gas pressure is above or below predetermined limits.

3,623,507

CONTROL ELEMENT FOR HYDRAULIC CYLINDERS

Edmund Vogg, Friedberg, and Wilhelm Renner, Kissing, both of Germany, assignors to Eisenwerk Gebr. Frisch KG Augsburg, Kissing, Germany

Filed Aug. 21, 1970, Ser. No. 65,865
Claims priority, application Germany, Aug. 25, 1969, P 19 43 208.7
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.66 **3 Claims**



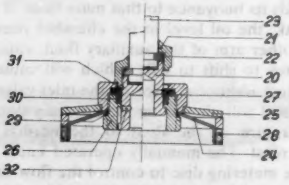
A control element for hydraulic cylinders particularly adapted for actuating working tools mounted on earth-moving machines and the like, wherein the front end of the control element is hydraulically biased against the force of springs to maintain the control element in a neutral position. In order to limit the stroke of the ends of the control element, pistons are provided at the ends which have a diameter larger than a diameter of the ends of the control element, and are displaced longitudinally between a pair of limits within variable springs. The springs are also supported between the inner side of the pistons and supports and caps, loosely placed over the ends of the control element. The caps serve as a collar or strap so that the ends are longitudinally displaced with respect to the control element housing.

3,623,508

SHUTOFF VALVE

Richard Huber, Modling near Wien, Austria, assignor to Istag A.G. Suhr/AG, Suhr, Aargau, Switzerland

Filed June 16, 1969, Ser. No. 833,412
Claims priority, application Austria, June 14, 1968, A 5729/68
Int. Cl. F16k *11/14*
U.S. Cl. 137—630.14 **13 Claims**



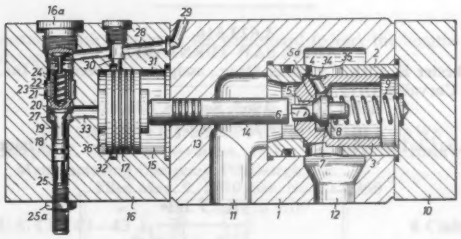
A shutoff valve comprises a valve casing, a plunger constituted of two parts and carrying an axially compressible sealing ring initially biased between the two parts of the

plunger, and a plunger operating spindle arranged for further movement in a closing direction after one of said plunger parts in closing position abuts against a shoulder of the valve casing, to increase the axial bias of the sealing ring. The two parts of the plunger are connected to the operating spindle in axially fixed positions by means of a threaded arrangement and they are elastically deformable upon the further movement of the spindle. The plunger parts are axially biased with respect to one another by adjustment of the members of the threaded arrangement.

3,623,509
CHECK VALVE CONTROLLING HYDRAULIC APPARATUS

Gerhard Sesseler, Ludwigsburg; Rainer Hoheisel, Kornwestheim, and Heinz Walter, Ditzingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 10, 1969, Ser. No. 883,931
Claims priority, application Germany, Dec. 12, 1968, P 18 14 214.8
Int. Cl. F16k *15/18*
U.S. Cl. 137—630.15 **10 Claims**

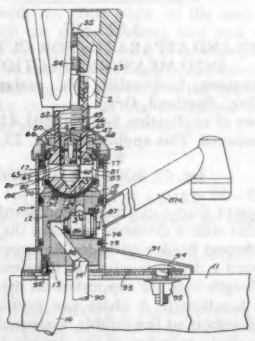


A check valve means including a main check valve and an auxiliary check valve mounted on the main check valve, is slowly opened by first opening the auxiliary check valve and then opening the main check valve. The check valves are controlled by a piston which is at first slowly moved by a throttled flow of fluid to open the auxiliary check valve whereby a pressure surge in the conduit of the check valves is avoided. Thereupon, the piston opens a port through which a pressure fluid is supplied into the cylinder so that the piston is rapidly accelerated and fully opens the main check valve.

3,623,510
SINGLE HANDLE FAUCET VALVE

Terence G. Hare, Union Lake, and Hugh McCormick, Dearborn, both of Mich., assignors to Miller Manufacturing Company, South Field, Mich.

Filed July 25, 1969, Ser. No. 844,869
Int. Cl. F16k *11/06*
U.S. Cl. 137—636.3 **18 Claims**

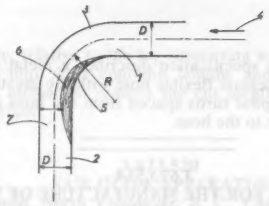


The single handle faucet disclosed herein comprises a faucet body which has a pair of inlets for hot and cold water and a liquid outlet. A valve body is mounted for swinging movement in a single plane within the body and has a spherical surface that is complementary to a similar compressible spherical surface on the faucet body. The valve body has a valve seat therein and passages extend from the spherical surface of the valve body to the valve seat. A valve stem is mounted within the valve body and supports a bib which is movable toward and away from the valve seat. Seals are provided on the valve.

3,623,511
TUBULAR CONDUITS HAVING A BENT PORTION AND CARRYING A FLUID

Leon Levin, Seyssinet, France, assignor to Societe anonyme dite: B.V.S., Grenoble, France

Filed Feb. 16, 1970, Ser. No. 11,692
Int. Cl. F15d *1/02*
U.S. Cl. 138—39 **3 Claims**

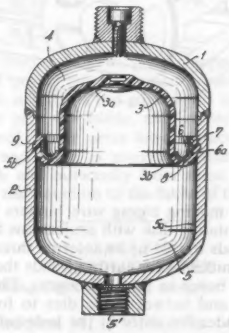


A curved pipe is provided having a varying shape but constant area cross section to reduce pressure drop across the bend.

3,623,512
PRESSURE RESERVOIR

Hans Ellwanger, Stuttgart, and Herbert Trautewein, Ludwigsburg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

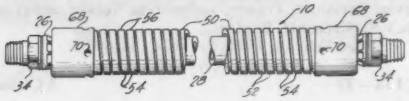
Filed Nov. 26, 1969, Ser. No. 880,233
Claims priority, application Germany, Nov. 29, 1968, G 68 09 162.3
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 **3 Claims**



An upper gas chamber and a lower pressure fluid chamber separated from each other by a diaphragm deflectable in direction of the gas chamber in response to pressure fluid admitted into the lower chamber. The diaphragm comprises a peripheral portion which, by means of an annular element, is sealingly pressed against the inner wall of the reservoir. The annular element has an arcuately curved circumferential guide surface which faces towards the fluid pressure chamber such that upon admittance of a fluid pressure in this latter chamber the center portion of the diaphragm is deflected into the gas chamber whereby the peripheral portion con-

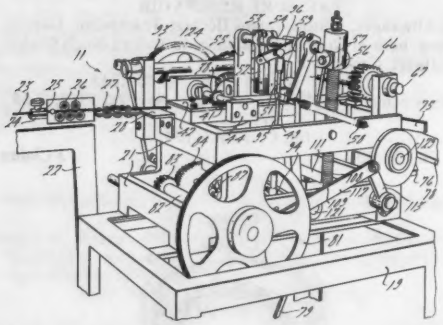
tacts the guide surface of the annular element and is thereby arcuately deformed which avoids acute bending and consequent breaking of the peripheral portion.

3,623,513
HIGH-PRESSURE FLEXIBLE HOSE SHEATH
Henry T. Dinkelkamp, Mount Prospect, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Feb. 16, 1970, Ser. No. 11,579
Int. Cl. F16l *9/18, 9/14*
U.S. Cl. 138—114 **7 Claims**



The following specification describes a metal sheath enclosing a high-pressure flexible hose with the sheath arranged in interlocked spiral turns spaced from the hose and axially movable relative to the hose.

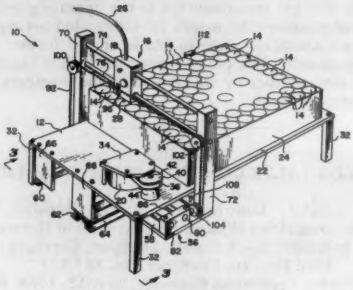
3,623,514
MACHINE FOR THE MANUFACTURE OF WIRE BINDERS
Ernst Pfaffle, Neuffen-Wuerttemberg, Germany, assignor to Hans Sickinger Co., Pontiac, Mich.
Filed Dec. 30, 1969, Ser. No. 889,085
Int. Cl. B21f *3/04, 45/16*
U.S. Cl. 140—71 R **12 Claims**



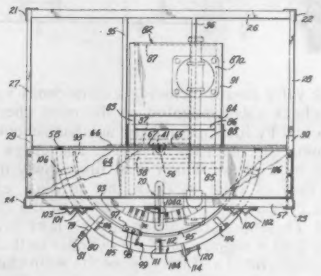
A machine for making zigzag wire binders for notebooks and the like. A rotating disk with projections bends the wire and causes the ends to ride up an internal thread. A coacting wheel with intermittent slots further bends the wire halfway between the first bends to form the zigzag. The latter passes under a top die and between side dies to form a partially curved zigzag binder for entry in the holes of the notebook sheets.

3,623,515
FRACTION COLLECTOR
Warren E. Gilson, 4801 Sheboygan Ave., Madison, Wis.
Filed Sept. 26, 1969, Ser. No. 861,367
Int. Cl. B65b *43/54*
U.S. Cl. 141—130 **5 Claims**

A rectangular array of containers arranged in rows and columns is supported beneath a filling structure. A flexible endless drive member is mounted to move through a pattern corresponding to the array of containers, and the filling structure is drivingly coupled to a segment of the flexible endless drive member. A single drive motor operates the flexible endless drive member sequentially to move the filling structure into registration with each container.



3,623,516
RADIAL SAW TURNTABLE
Chester E. Kirk, Corvallis, Oreg., assignor to Speed Cut Inc., Corvallis, Oreg.
Filed Aug. 1, 1969, Ser. No. 846,828
Int. Cl. B27b *5/20*
U.S. Cl. 143—6 A **3 Claims**

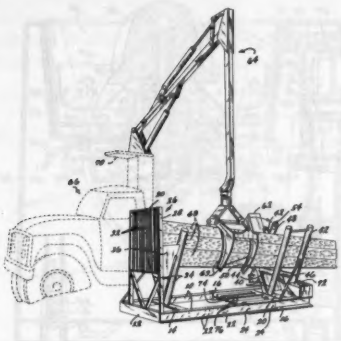


A turntable is provided on which a conventional radial saw is mounted so that the center of the pivotal adjustment of the saw angle is through the straightedge guide at the side of the board-supporting portion of the turntable. This arrangement provides a maximum length of cut at all angular settings of the saw with all of the cuts starting centrally of the board-supporting table.

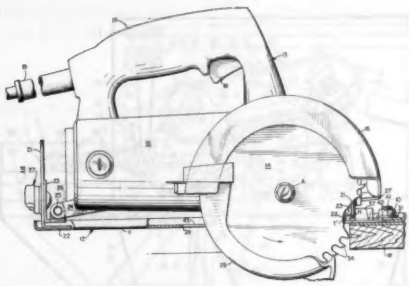
3,623,517
METHOD AND APPARATUS FOR CUTTING TREES INTO MEASURED SECTIONS
Karl R. Neumann, Ladysmith, Wis., assignor to Omark Industries, Inc., Portland, Oreg.
Continuation of application Ser. No. 801,413, Feb. 24, 1969, now abandoned. This application Oct. 23, 1970, Ser. No. 83,669
Int. Cl. B27b *17/00, 29/00*
U.S. Cl. 143—32 **8 Claims**

An elongated frame carries a headboard at one end, a V-shaped holder with a crossbar adjacent the headboard, and a double V-shaped holder with double crossbars spaced from the headboard a distance equal to the desired lengths of the logs. Tree length logs are supported on the crossbars abutted against the headboard. A chain saw positioned between the V-shaped members of the double V-shaped holder severs the logs. The outside crossbar of the double V-shaped holder is slightly lower than the supported logs so that as the logs are cut the weight of the logs beyond the saw produces an effec-

tive downward force to open the cut and prevent binding of the saw. The double V-shaped holder with saw may be adjustable with respect to the backboard to vary the lengths of the severed sections.



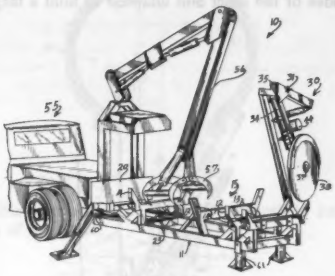
3,623,518
ANTISPLINTER INSERT FOR PORTABLE SAWS
Joseph P. Nicotra, Syracuse, N.Y., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.
Filed Mar. 9, 1970, Ser. No. 17,760
Int. Cl. B27b 9/00
U.S. Cl. 143—43 A 6 Claims



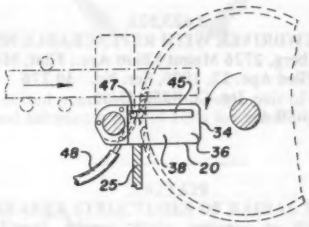
A portable circular saw antisplintering insert for removable association with the shoe plate of the saw including a plate formed with an edge opening slot and designed to firmly bear upon the upper surface of a workpiece in close adjacent relation to the sides and tips of the emerging cutting teeth to prevent tearing and chipping of the upper lamination or formica or like covering of the workpiece and assure a clean finish cutting of such workpieces.

3,623,519
PULPWOOD SLASHER
Thomas H. Radle, Orr, Minn., assignor to Elmer Mrozek, Waukesha, Wis.
Filed Oct. 29, 1969, Ser. No. 872,222
Int. Cl. B27b 11/12
U.S. Cl. 143—46 R 4 Claims

A longitudinal frame having a log-supporting surface for the reception of multiple stems of pulpwood positioned and secured thereon by a boom and grapple. A longitudinally movable butt plate at one end of the log-supporting surface engages the adjacent butt ends of the logs to index same into even lengths relative to a circular saw mounted at the other end of the log-supporting surface. The circular saw is mounted for movements in a plane, perpendicular to the log-supporting surface, at any given angle in the plane, through 180° of arc, relative to the log-supporting surface to saw the pulpwood into short common lengths and the boom and grapple is utilized to remove the cut lengths from the supporting surface.



3,623,520
SAW GUIDE APPARATUS
Peter J. Neild, North Vancouver, B. C., Canada, assignor to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada
Filed Sept. 17, 1969, Ser. No. 858,707
Int. Cl. B27b 11/02, 13/10, 13/12
U.S. Cl. 143—164 8 Claims



There is disclosed saw guide apparatus for sawing machines and sawing machines incorporating this apparatus. The saw guide apparatus has guide arms to be positioned on opposite sides of a saw blade, and spaced slightly from the surfaces thereof. These arms have surfaces opposed to the blade faces, and there is provided means for directing a liquid through and outwardly from these surfaces so as to apply films of the liquid on to the faces of the blades.

3,623,521
TREE HARVESTER
Dean W. Shields, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed June 11, 1970, Ser. No. 45,314
Int. Cl. A01g 23/02
U.S. Cl. 144—309 AC 9 Claims

A novel and improved tree-harvesting method and apparatus adapted to cut, delimb, top, sort, transport, and deposit a plurality of trees in two sorted stacks at a desired collection point. The tree harvester features a horizontally oriented mast which is mounted on a mobile vehicle. A butt shear and felling grapple are mounted at one end of the mast and are adapted to grasp and sever a standing tree and pivot it to a substantially horizontal position overlying the mast where it is grasped and securely held by a transfer grapple. A combination delimber and top shear is mounted for longitudinal movement on the top of the mast and is adapted to be

driven along the tree to strip all limbs from the tree and also to remove the top portion of the tree at either a predetermined length or diameter. After the tree has been delimbed and topped, it is dropped by the transfer grapple into one of two sets of collection arms positioned at intervals along opposite sides of the mast and adapted to hold a large number

of delimbed, topped and sorted trees to be transported by the tree harvester to desired collection points where the trees are deposited in separate sorted stacks. The positioning of collection arms on opposite sides of the mast allows the operator to sort the delimbed and topped trees (e.g. according to length or type of wood) and drop them into the appropriate collection arms.

3,623,522

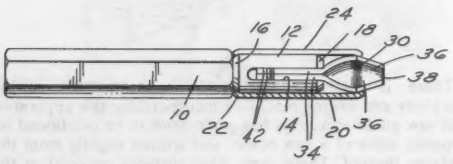
SCREWDRIVER WITH REPLACEABLE NIB

Fritz L. Lindberg, 2726 Mount Elliott Ave., Flint, Mich.

Filed Apr. 22, 1970, Ser. No. 30,776

Int. Cl. B25b *15/00*

U.S. Cl. 145—50 A **7 Claims**



A screwdriver with a replaceable nib for use in production procedures to permit replacement of the nib due to wear without replacement of the entire tool. The basic concept involves a split nib which permits ready removal but adequate retention during use.

3,623,523

COMBINATION CAN OPENER AND JUICER

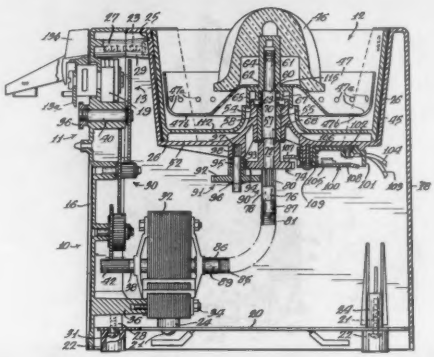
Donald R. Meyer, Thiensville, Wis., and Albert C. Tsang, Monroeville, Pa., assignors to John Oster Manufacturing Co., Milwaukee, Wis.

Filed Apr. 17, 1969, Ser. No. 817,054

Int. Cl. A47j *19/00*; **B17b** *7/38*

U.S. Cl. 146—3 E **14 Claims**

A combination can opener-juicer appliance having an electric motor, a speed reduction gear assembly interconnecting the output shaft of the motor and the can opener's feed wheel and a flexible drive cable interconnecting the output shaft of the motor and the juicer's rotating mechanism. The can opener and the juicer include switching devices that are actuated automatically to commence and terminate the operation of their respective mechanism. The components of



a combination can opener-juicer appliance nested together to provide a compact multipurpose appliance with the components of the juicer arranged for easy cleaning.

3,623,524

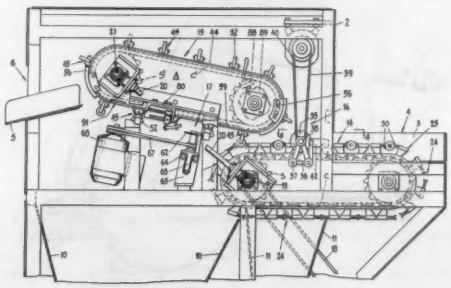
MACHINE FOR PREPARING ONIONS

Edwin James Buck, Victoria, Australia, assignor to Tripax Engineering Company Proprietary Limited, Victoria, Australia

Filed Dec. 11, 1968, Ser. No. 788,679

Int. Cl. A23n *15/04*

U.S. Cl. 146—43 **12 Claims**



An onion-preparing machine comprising a conveyor adapted to carry onions past two spaced blades to cut a predetermined portion from the top and tail of the onions, a further conveyor adapted to receive the onions from the first-mentioned conveyor and carry them past two further spaced blades which slit the skin and adjacent layers of the onions longitudinally thereof, and two air jets arranged to direct high-pressure air into said longitudinal slits to remove the slit skin and layers from the onions.

3,623,525

ADJUSTABLE RADIALLY ARRANGED FOOD-SLICING ASSEMBLY

Raymond Kieves, 1507 Inkster Blvd., Winnipeg, Canada

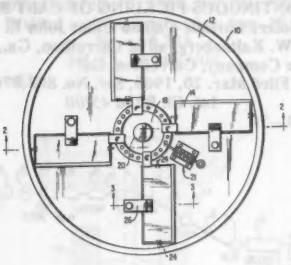
Filed May 13, 1970, Ser. No. 36,967

Int. Cl. B26d *4/22*, *4/48*

U.S. Cl. 146—124 **6 Claims**

A food-slicing assembly comprising a rotary circular disk having a plurality of pivotally mounted cutting blades positioned in radially arranged elongated slots on the disk. A

concentrically mounted sleeve having a series of inclined surfaces provides adjustment of the acute angle of the blades



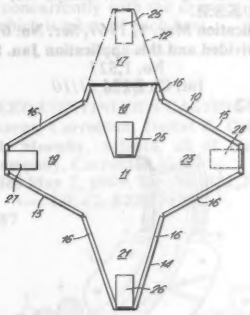
with respect to the plane of the disk for the purpose of varying the thickness of the food slices which are produced by slicing a food mass pressed against the disk.

3,623,526

KNOCKDOWN FOLDING PACKAGE

Elwood Frank Robertson, Halifax, Canada, assignor to Flowood Industries Limited, Dartmouth, Nova Scotia, Canada

Filed Dec. 29, 1969, Ser. No. 888,511
Claims priority, application Canada, Sept. 23, 1969, 062,763
Int. Cl. B65d *65/06*
U.S. Cl. 150—52 R **3 Claims**



A knockdown folding package is provided which is formed from a single blank of flexible lightweight material. The package includes a central area and a plurality of flaps (for example, four flaps) extending outwardly from the central area. The flaps may be folded one upon the other to provide a central compartment to hold articles. Means for releasably retaining the flaps in a folded condition are provided associated with the flaps, such means preferably consisting of "Velcro" coupling members.

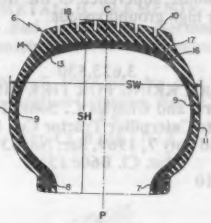
3,623,527

PNEUMATIC TIRE

Kevin B. O'Neil, Akron, Ohio, and Paul E. Helms, Jr., Fort Knox, Ky., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 22, 1970, Ser. No. 30,732
Int. Cl. B60c *9/06, 9/18*
U.S. Cl. 152—354 **16 Claims**

A bias-belted tire having carcass, or tire body plies with reinforcing cords of polyester or nylon, and annular belts



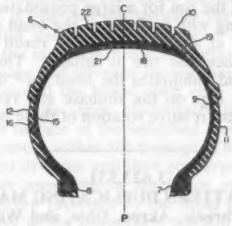
with metallic reinforcing cords circumferentially embedded in the area of the tread.

3,623,528

BIAS-BELTED PNEUMATIC TIRE

Frederick J. Kovac, Bath, and Kevin B. O'Neil, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 11, 1970, Ser. No. 18,425
Int. Cl. B60c *9/02*
U.S. Cl. 152—356 **6 Claims**



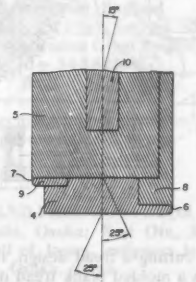
A bias-belted pneumatic tire having a pair of carcass plies sandwiched between a pair of belts for annularly reinforcing the tire.

3,623,529

BREAKER STRUCTURES OF RADIAL TIRES

Fulcieri Fausti, Monza, Italy, assignor to Pirelli, S.p.A., Milan, Italy

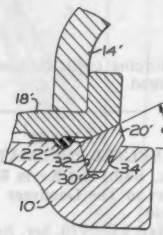
Filed Dec. 30, 1969, Ser. No. 889,257
Claims priority, application Italy, Jan. 4, 1969, 11174A/69
Int. Cl. B60c *9/20*
U.S. Cl. 152—361 **5 Claims**



The disclosure relates to an invention in a pneumatic tire for a vehicle which tire has a radial carcass and a tread provided with a breaker structure. The breaker structure comprises a plurality of radially disposed strips formed of cords disposed at various angles relative to the midcircumferential

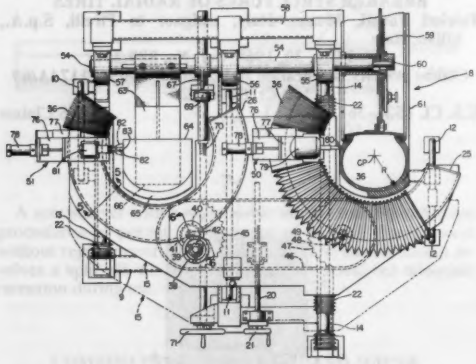
plane of the tire. The breaker strips are arranged and folded relative to each other to produce such stiffness as to cause substantially absolute adherence of the tire to the travelling surface at low or high ground speeds.

3,623,530
LOCKRING FOR TIRE RIMS
Marvin E. Beyers, and Charles C. Sons, Jr., both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed July 7, 1969, Ser. No. 839,406
Int. Cl. B60c *15/02*
U.S. Cl. 152—410 **1 Claim**



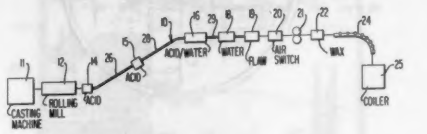
A lockring which fits between the rimbase and removable bead seat band of the rim for a large pneumatic tire and having surfaces mating with surfaces of the bead seat band and rimbase disposed at angles with which result in great frictional contact when the tire is inflated. This produces a wedging effect and eliminates the need for "drivers" which are interengaging lugs on the rimbase and removable bead seat band to prevent relative rotation of these parts.

3,623,531
TREAD PATTERN DUPLICATING MACHINE
Christopher E. Christie, Akron, Ohio, and William J. Head, Rollingen, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed July 20, 1970, Ser. No. 56,564
Int. Cl. B29h *17/40*
U.S. Cl. 157—13 **14 Claims**



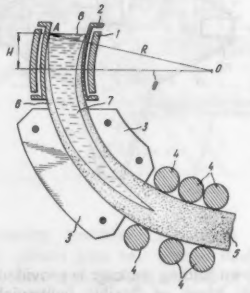
A machine for cutting a tread design, or a series of configured grooves in a molded blank tread of a tire. A precast or molded pattern with a predetermined tread design, and a tire with a blank tread are mounted on the machine for unitary rotation in parallel planes. The machine has a sensor and cutter which are mounted in corresponding spaced relation from the pattern and tire, respectively. The cutter moves in cutting relation with the blank tread in corresponding relation to movement of the sensor over the pattern, such that the tread design on the molded pattern is duplicated on the tread of the tire.

3,623,532
CONTINUOUS PICKLING OF CAST ROD
Daniel B. Cofer; Enrique Calixto Chia; John E. Burnitt, and Theodor W. Kaltenberg, all of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.
Filed Mar. 20, 1969, Ser. No. 808,976
Int. Cl. B22d *45/00*
U.S. Cl. 164—76 **11 Claims**



A system for continuously quench-pickling cast rod from a continuous casting machine wherein molten metal is poured into a mold of a casting device and cooled and solidified into a continuous solid bar, the bar is elongated and reduced in its cross-sectional area to form continuous rod, and the rod is arranged in a coil. The surface of the hot rod from the rolling mill is contacted with a pickling fluid, such as a citric acid solution, after the rod leaves the rolling mill and before the rod is arranged in a coil, to simultaneously quench and pickle the rod.

3,623,533
METHOD OF MOLTEN METAL HEIGHT CONTROL IN CURVED MOLD CONTINUOUS CASTING
Viktor Nikolaevich Khorev, ul. Bazhova, 130, kv. 107; Georgy Lukich Khimich, ul. Lenina, 53, kv. 92, and Vitaly Maximovich Niskovskikh, ul. Festivalnaya 21, kv. 60, all of Sverdlovsk, U.S.S.R.
Original application Mar. 1, 1967, Ser. No. 619,622, now abandoned. Divided and this application Jan. 8, 1970, Ser. No. 1,527
Int. Cl. B22d *11/10*
U.S. Cl. 164—82 **2 Claims**



Continuous casting with a curved mold mounted so that when casting metal the meniscus thereof is above the horizontal plane passing through the center of curvature of the mold by a height H as determined by the relationship

$$H = R \sin \sqrt[3]{\frac{4K^2}{RV}}$$

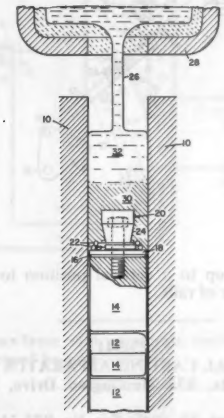
where
R is the radius of curvature of the mold;
K is the coefficient of crystallization of the molten metal; and
V is the casting speed.

3,623,534

METHOD FOR STARTING A CONTINUOUS CASTING

Thomas H. Brennan, Upland, Calif., assignor to American Pipe and Construction Co., Los Angeles, Calif.

Original application Feb. 15, 1968, Ser. No. 705,762, now abandoned. Divided and this application Aug. 19, 1970, Ser. No. 65,273
Int. Cl. B22d *11/08*
U.S. Cl. 164—82 1 Claim



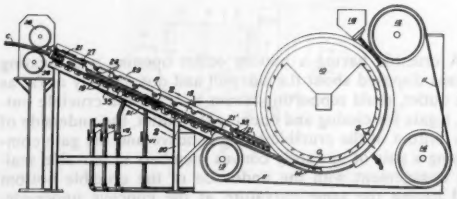
A heat sink casting is cast around the exposed portion of a conventional starting bolt, stud or pin to prevent the starting bolt, stud or pin from being softened and failing when the cast or strand is started. The heat sink casting may be cheaply made concurrently with the drawing of the spectrograph sample which is taken of each heat.

3,623,535

HIGH-SPEED CONTINUOUS CASTING METHOD

George E. Lenaeus, Carrollton; Daniel B. Cofer, Carrollton, and John H. Murphy, Atlanta, all of Ga., assignors to Southwire Company, Carrollton, Ga.

Filed May 2, 1969, Ser. No. 821,299
Int. Cl. B22d *11/06*
U.S. Cl. 164—87 4 Claims



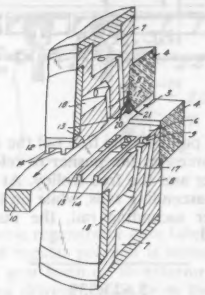
A high-speed continuous casting apparatus and method wherein the method includes partially solidifying a molten metal in a mold defined between the peripheral groove of a rotating casting wheel and a flexible band until the metal shrinks and draws away from the casting wheel, thereupon removing the band from the casting wheel and subsequently cooling the metal to complete its solidification. The apparatus includes the combination of a casting wheel having a peripheral groove with a portion of its length closed by an endless band to form a casting mold and an auxiliary cooling means for cooling the metal to complete its solidification. This allows the casting wheel to be rotated at that rotational speed which causes the metal to pass from the casting wheel as, or shortly before or after, the metal shrinks away from the casting wheel.

3,623,536

METHOD AND MOLD FOR CONTINUOUSLY CASTING METALLIC ELEMENTS

Gunther Moritz, Bad Godesberg, Germany, assignor to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Germany

Filed Nov. 7, 1969, Ser. No. 874,794
Claims priority, application Germany, Nov. 12, 1968, P 18 08 418.9
Int. Cl. B22d *11/12*
U.S. Cl. 164—89 11 Claims



A mold for continuous casting of metallic elements has a passage which is oriented substantially vertically and has an upper open end and a lower open end so that metal introduced into the upper open end in molten state will solidify within the passage and advance therewithin in solidified form towards and beyond the lower open end. The passage is so configurated that its inner circumferential wall is spaced from the outer surface of the solidified metal element which forms and advances within the passage. The cross section of the passage first diverges and then converges in the direction from the upper open end to the lower open end. Cooling water conduits are provided in the mold and communicate with the passage in the convergent portion thereof, being so arranged that in this portion they cool only the mold and thereby indirectly the solidified metal element, whereupon the water runs along the inner circumferential wall of the passage to the throat or narrowest part of the convergent-divergent cross section where it contacts and directly cools the advancing metal element. The injection of water through the conduits into the convergent portion of the passage produces a venturi action and the resulting underpressure in the passage is utilized to draw air, a desired gas and/or lubricating fluid into the passage.

3,623,537

CASTING OF INGOTS

Roger Mervyn Hilton, and John Frances Xavier Watkinson, both of Birmingham, England, assignors to Foseco International Limited, Birmingham, England

Filed Nov. 13, 1969, Ser. No. 876,616
Claims priority, application Great Britain, Nov. 14, 1968, 54,159/68
Int. Cl. B22d *37/00*
U.S. Cl. 164—133 11 Claims

Splash during teeming ingots is minimized by locating a foam pad in the ingot mould prior to use.

3,623,538

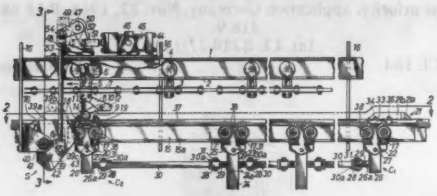
POWER AND FREE CONVEYOR SYSTEM

Takao Wakabayashi, Osaka; Koji Ota, Kyoto, and Yukio Soma, Osaka, all of Japan, assignors to Nakanishi Metal Works Co., Ltd., Osaka, Japan

Filed May 26, 1969, Ser. No. 827,619
Claims priority, application Japan, ay 30, 1968, 43/37272; May 31, 1968, 43/37130; May 31, 1968, 43/37131; June 3, 1968, 43/38108; Aug. 30, 1968, 43/62532
Int. Cl. B65g *17/42*
U.S. Cl. 104—172 S 7 Claims

A power and free conveyor system that has a number of carriers and consists of a leading main free trolley and a rear subtrolley provided with a rear cam for forcing up a pusher.

Pushers are attached at regular intervals to the driving chain, which is guided by the power rail. The pushers are provided with rollers and are linked to the forward tilting dog of the main free trolley. Next to the free rail, which guides the free trolley, is a subrail, upon which are both side rollers of the



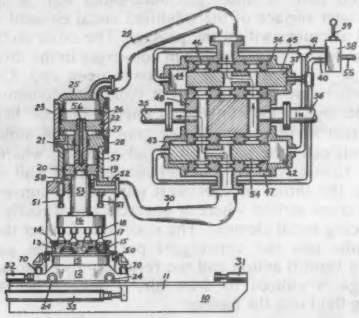
pusher. At a fixed point on the free rail the carrier stopper is arranged which forces up the pusher to release the engagement of the pusher and the free trolley. At carrier-diverting points are pusher-ascending rails, while on the diverting side behind the pusher ascending rail, the pusher-guiding apparatus is provided.

3,623,539

IMPACT SAND MOLDING MACHINE

Russell W. Taccone, Erie, Pa., assignor to Bangor Punta Operation, Inc., New York, N.Y.

Filed Feb. 14, 1969, Ser. No. 799,423
Int. Cl. B22c *15/08*
U.S. Cl. 164—173 **3 Claims**



The present disclosure is directed to a machine for making green sand molds by an impact mechanism which imparts an impact from an impact head driven by the explosive force of suddenly released compressed air in such a way that the molding head strikes the sand and imparts its kinetic energy by way of an impulse to the sand, thereby packing the sand around the patterns. It has been discovered that by using the impulse principle in molding, the sand is uniformly packed and uniform mold hardness results.

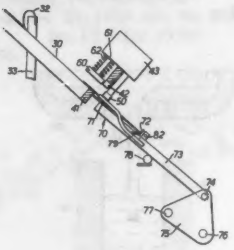
3,623,540

MACHINE FOR CASTING AND TRIMMING BATTERY PLATE GRIDS

Alan John Goodwin, and Norman Shanks, both of Swinton, England, assignors to Chloride Overseas Limited, Swinton, Manchester, England

Filed June 20, 1969, Ser. No. 834,964
Claims priority, application Great Britain, June 21, 1968, 29,680/68
Int. Cl. B22d *31/00*; B26d *7/16*
U.S. Cl. 164—262 **12 Claims**

A machine for trimming and stacking lead-acid battery electrode grids has a single pair of blades for cutting off first the feet and bottom edge, and then the top edge of each casting. The grids are delivered from the casting mould on to a sloping slide on which each grid slides down past the blades to an upper stop for the first cut and then to a lower stop for the second cut. The lower stop has a transfer plate on which



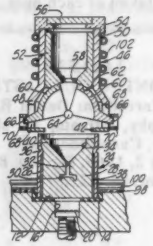
the grid is swung up to a vertical position to join a stack suspended on a pair of rails.

3,623,541

METAL CASTING APPARATUS

William L. Schmitz, 835 Huntington Drive, San Marino, Calif.

Filed Oct. 29, 1969, Ser. No. 872,310
Int. Cl. B22d *27/16*
U.S. Cl. 164—337 **6 Claims**



A crucible having a bottom outlet opening with heating means disposed about the sidewall and downwardly as far as the outlet, mold supporting means beneath the crucible outlet, a gate for closing and opening the outlet, the underside of the bottom of the crucible being concave and the gate comprising a pair of upwardly convex members in movable sealing engagement with the underside of the crucible bottom and having the same curvature as the concave underside, whereby the outlet and gate are located in the heating zone provided by the heating means.

3,623,542

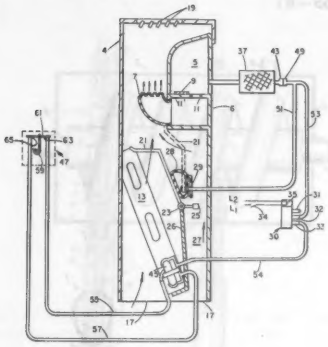
CONTROL OF AIR-CONDITIONING APPARATUS

Daniel A. Fragnito, Solvay, and William C. Heck, Dewitt, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 31, 1969, Ser. No. 872,907
Int. Cl. B60h *1/00*
U.S. Cl. 165—1 **4 Claims**

A control system for air-conditioning apparatus adapted to be placed in communication with a source of primary air and operable for conditioning the air in an area. During normal operation of the air-conditioning apparatus, controls regulate the operation thereof in response to the temperature of the

air in the area. The controls include a normally open valve, the closure thereof being operable to interrupt the flow of



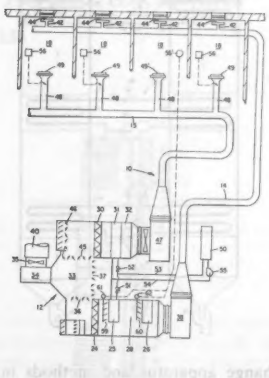
conditioned air from said apparatus, irrespective of the area demand as sensed by said controls.

3,623,543

DUAL CONDUIT AIR-CONDITIONING SYSTEM

William S. Ostrander, Chamblee, Ga., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 2, 1970, Ser. No. 25,124
Int. Cl. F25b *13/00*
U.S. Cl. 165—2 4 Claims



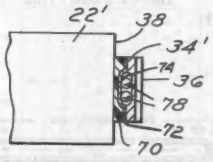
An air-conditioning system including first and second central station apparatus for supplying conditioned primary and secondary air, respectively, to a plurality of enclosed areas in a building. A constant volume of secondary air is supplied to a preselected area. The temperature of the area is sensed and the first central station apparatus is operated to provide a constant volume of primary air to each of the enclosed areas at a temperature related to the temperature sensed in the preselected enclosed area. Secondary air is supplied to each of the other areas simultaneously with the supply of secondary air to the preselected area, the volume thereof being regulated to provide a desired temperature condition in each of the areas.

3,623,544

GAS TURBINE HEAT-EXCHANGING SYSTEM USING FLEXIBLE LOCATING MEMBERS FOR TORQUE TRANSMISSION

Arthur F. McLean, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Original application Aug. 29, 1968, Ser. No. 756,236. Divided and this application Nov. 5, 1969, Ser. No. 871,255
Int. Cl. F28d *19/02*
U.S. Cl. 165—8 5 Claims



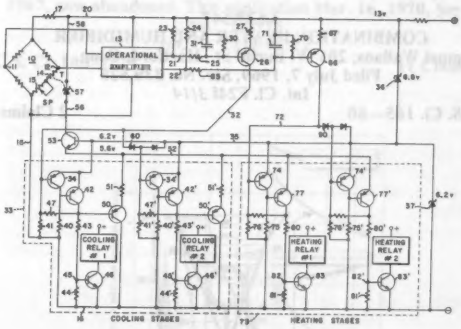
A porous ceramic regenerator core fabricated in the shape of a twelve-sided regular polygon is surrounded by a metal ring gear having gear teeth on its exterior surface. Locating members transmit driving torque from the ring gear to the core while permitting the core to move radially and axially relative to the ring gear. Narrow slots can be cut into the outer edge of the ceramic core to relieve thermally induced stresses.

3,623,545

AUTOMATIC CHANGEOVER HEATING-COOLING SYSTEM HAVING SINGLE SEMICONDUCTOR ANTICIPATOR FOR BOTH HEATING AND COOLING

Balthasar H. Pinckaers, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

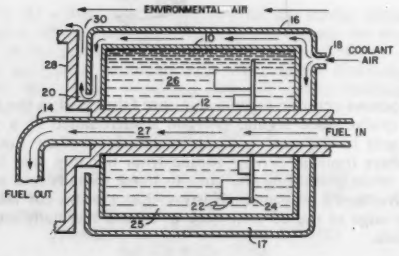
Filed July 16, 1970, Ser. No. 55,321
Int. Cl. G05d *23/30*
U.S. Cl. 165—26 6 Claims



A modulating type of thermostat controls an automatic changeover heating-cooling temperature-regulating system that sequentially adds units of cooling or units of heating as called for by the thermostat. The modulating thermostat utilizes a thermistor type of temperature sensor to control a bridge circuit and amplifier. The thermostat includes a heat anticipator in the form of a semiconductor current-carrying means such as a Zener diode that is in heat exchange relationship with the temperature sensor. The semiconductor current-carrying means acts as a constant voltage drop regardless of the amount of current flowing therethrough so that the heating effect of the semiconductor means is a linear function of the amount of current flowing therethrough. This

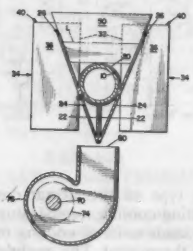
semiconductor element provides the anticipation for both heating and cooling, the element being biased with an intermediate current at the control system dead band between heating and cooling, the current therethrough being reduced as cooling is required and increased as heating is required.

3,623,546
COOLING SYSTEM FOR AN ELECTRONIC ASSEMBLY MOUNTED ON A GAS TURBINE ENGINE
Clifford R. Banthin, Redding; Dennis F. Sharp, Shelton, and Ernest M. Mihalyak, West Haven, all of Conn., assignors to Avco Corporation, Stratford, Conn.
Filed Nov. 10, 1969, Ser. No. 875,145
Int. Cl. F02b *11/02*
U.S. Cl. 165—51 **5 Claims**



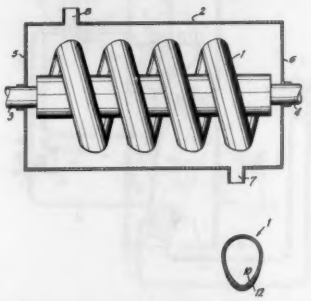
The illustrated embodiment shows a cooling system for electronic equipment mounted on a gas turbine engine. The system combines air, engine fuel, and a thermally conductive electrically dielectric fluid to provide cooling under extreme heat environments. Electronic equipment is placed in a thermally conductive fluid within an annular container which is horse-collared on a fuel line. The container is double walled and coolant air is directed through the space between the walls. Thus cooling results from coolant air and engine fuel, and is made more efficient by the fluid.

3,623,547
COMBINATION HEATER AND HUMIDIFIER
Samuel Wallans, 201 W. Euclid St., Hartford, Conn.
Filed July 7, 1969, Ser. No. 839,525
Int. Cl. F24f *3/14*
U.S. Cl. 165—60 **2 Claims**



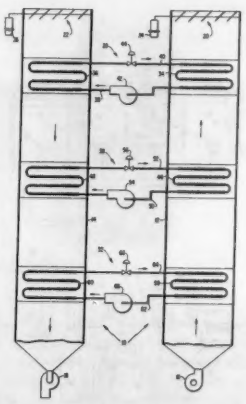
A combination heater and humidifier of the baseboard type which includes an elongated evaporation water trough or reservoir sitting on and in thermal contact with a line conveying the heating medium whereby water introduced into the water trough is evaporated therefrom by means of the heat directly conducted thereto from the heating medium line.

3,623,548
ROTARY COIL FOR HEAT EXCHANGERS AND SIMILAR DEVICES EQUIPPED WITH SUCH COIL
Ralph W. Cook, 311 Main St., Dunedin, Fla., and Samuel A. Mencacci, 30 Ahornenlaan, Wilrijk-near-Antwerp, Belgium
Filed Sept. 29, 1969, Ser. No. 861,831
Int. Cl. F28f *13/14*
U.S. Cl. 165—87 **9 Claims**



A rotary coil for heat exchangers and similar devices, having a substantially airfoil-shaped cross section.

3,623,549
HEAT EXCHANGE METHODS AND APPARATUS
Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.
Filed Aug. 14, 1970, Ser. No. 63,759
Int. Cl. F28d *15/00*
U.S. Cl. 165—107 **4 Claims**

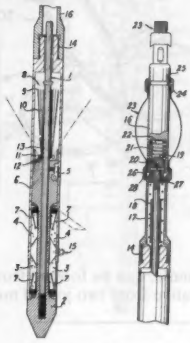


Heat exchange apparatus and methods in which liquids having different phase change characteristics absorb heat from a relatively hot gas at one location and give up the heat to a relatively cool gas at a second location.

3,623,550
APPARATUS FOR PLUGGING CASED PETROLEUM PRODUCTION WELLS
Guy de Lajarte, Toulouse, and Jacques de Saint Palais, Saint Gaudens, both of France, assignors to Entreprise de Recherches et d'Activites Petrolieres (Elf), Paris, France
Filed Feb. 16, 1970, Ser. No. 11,587
Claims priority, application France, Feb. 26, 1969, 6905030
Int. Cl. E21b *23/06, 33/126*
U.S. Cl. 166—125 **1 Claim**

An umbrella unit which is screwed to an actuating tool and lowered into the production tubing of an oil well by means of

a wire line is fitted with a set of upwardly directed and a set of downwardly directed spring-actuated knives which are outwardly and radially displaceable within the well casing so as to lock said umbrella against the casing wall in the required plugging position, the umbrella proper being then caused to open out radially and filled with gravel or like



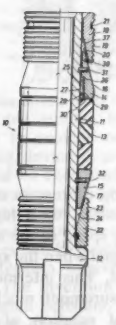
material. A spoon comprising a reservoir tube filled at the wellhead with cement grout is lowered by means of a wire line, the cement grout being discharged through bottom openings by means of a glass window which is broken by means of a striker piece upon impact of the bottom of the spoon on the gravel.

3,623,551

ANCHORING APPARATUS FOR A WELL PACKER

Ervin Randermann, Jr., Beasley, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jan. 2, 1970, Ser. No. 56
Int. Cl. E21b *23/06, 33/129*
U.S. Cl. 166—134 **5 Claims**



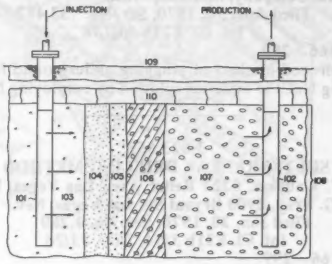
Means for anchoring a well packer in a well casing, including an expander cone movable in one longitudinal direction along a mandrel and a first clutch means to prevent movement of the mandrel relative to the expander cone in the opposite direction, slips shifted outwardly by the expander cone by movement of the slips relative thereto in said one direction, and a second clutch means to prevent movement of the slips relative to the expander cone in said opposite direction.

3,623,552

RECOVERY OF OIL BY LOW-PRESSURE MISCIBLE GAS INJECTION

Juris Vairogs, Tulsa, Okla., assignor to Cities Service Oil Company

Filed Nov. 13, 1969, Ser. No. 876,548
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **6 Claims**



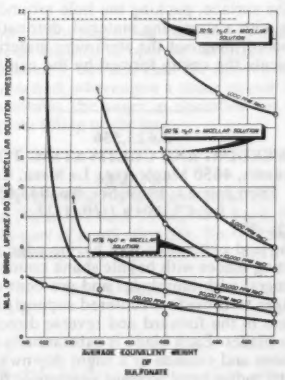
An oil miscible gas such as carbon dioxide is injected into a subterranean oil reservoir to maintain a reservoir pressure near the critical pressure of the gas. Under predetermined conditions of temperature and pressure the miscible gas-crude oil mixture exhibits a three-phase vapor-liquid phenomena which enhances the recovery of oil from the subterranean reservoir. A miscible gas-rich liquid phase is formed between the oil-rich liquid phase and miscible gas-rich vapor phase and exhibits a density and viscosity intermediate between that of the oil and gas regions. This phenomenon creates a unique fluid distribution and mobility relationship which provides for a significant increase in the efficiency of the displacement of the oil from the gas-swept reservoir.

3,623,553

FLOODING WITH MISCIBLE-TYPE FLUID SLUGS HAVING DIFFERENT BRINE TOLERANCES

David N. Burdge, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of application Ser. No. 665,078, Sept. 1, 1967, now abandoned. This application Mar. 16, 1970, Ser. No. 19,573
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 **11 Claims**



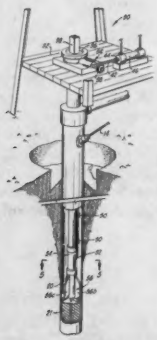
Micellar dispersions useful in flooding subterranean formations and desirably having a particular brine tolerance permitted by the components within the micellar dispersion are obtained by utilizing low average equivalent weight surfactants to obtain a high brine tolerance and increasing average

equivalent weight surfactant to obtain lower brine tolerances. These dispersions are injected and displaced through the formation to give improved oil recoveries.

3,623,554
METHOD OF PLUGGING SALINE FORMATIONS
Samuel A. Pence, Jr., Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.
Filed Apr. 30, 1970, Ser. No. 33,487
Int. Cl. E21b *33/138*
U.S. Cl. 166—293 **8 Claims**

An improved method of plugging underground formations containing NaCl in aqueous solution by employing NaF.

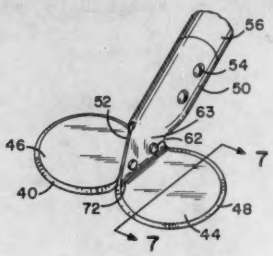
3,623,555
SUBTERRANEAN DRILLING METHOD
Carroll F. Knutson, 5223 Reiter Ave., Las Vegas, Nev., and Bruce G. Bray, 2900 Bryant St., Las Vegas, Nev.
Filed Jan. 20, 1970, Ser. No. 4,289
Int. Cl. E21b *3/04, 7/00, 43/26*
U.S. Cl. 166—299 **4 Claims**



A method of forming a subterranean cavity communicated with the surface through a drilled hole which includes the steps of drilling a hole from the surface of the ground to the subterranean situs at which the cavity is to be located, suspending an explosive at the lower end of the hole on a flexible suspending member extended downwardly in the hole from the surface, packing the hole around the suspending member with a stemming material, detonating the explosive, and then drilling out the stemming material in the hole to communicate the cavity formed by the explosion with the surface.

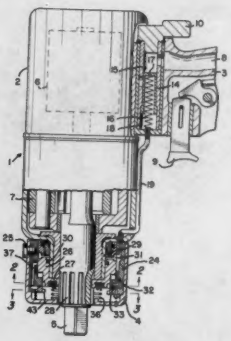
3,623,556
WEEDING AND CULTIVATING TOOL
Monte E. Adams, 4650 Maple Ave., La Mesa, Calif.
Filed July 23, 1969, Ser. No. 843,950
Int. Cl. A01b *1/10, 1/22*
U.S. Cl. 172—371 **9 Claims**

A weeding and cultivating tool having edge abutting, dual disclike cutting blades with handle shank connecting portions that are integral with the blades and are bent upward at the abutting edges to provide a centered support that has a narrow thickness in the forward and reverse direction of movement of the blades. Each blade is substantially normal to the shank portions and extends at a slight downward angle from normal at the radius bend to resist permanent distortion from bending and twisting of the blades and shank when forced through the earth. The disclike cutting blades have continuous cutting edges around their open periphery that merge at the shank portions to form front and rear cutting crotches that extend into the central shank portions. In one embodiment, the lower surface of each disclike cutter has a front to rear concave curvature which, when formed with said radius bend, results in compound curvature which further resists permanent distortion of the blades and shank. The entire



tool, except for its handle, can be formed from a single metal blank or in the alternative from two joined metal blanks.

3,623,557
TURN-OF-THE-NUT WRENCH SHUTOFF SYSTEM
Edward L. Allen, Athens, Pa., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed June 29, 1970, Ser. No. 50,446
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 **8 Claims**

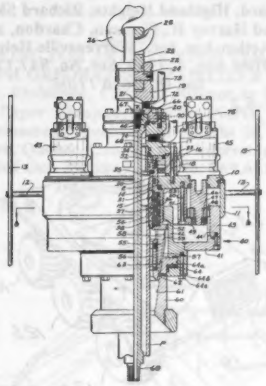


A power wrench having a pressure operated shutoff valve moved to its closed position by a high-pressure signal. A mechanism measures the speed of the spindle and creates an intermediate pressure signal when the spindle speed is slowed to a selected slow speed. This intermediate pressure signal activates an angle measurement mechanism which begins measuring the angle of rotation of the spindle and in response to a selected angle creates a high-pressure signal operative to close the shutoff valve and stop the wrench.

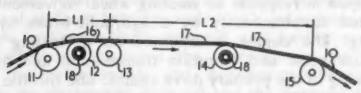
3,623,558
POWER SWIVEL FOR USE WITH CONCENTRIC PIPE STRINGS
Cicero C. Brown, 5429 Sturbridge Drive, Houston, Tex.
Filed Sept. 8, 1970, Ser. No. 70,425
Int. Cl. F21b *3/02*
U.S. Cl. 173—57 **10 Claims**

A power swivel for use with concentric drill pipe strings to

enable rotation of an outer pipe string while operatively connected to a stationary inner pipe string for supplying power fluid to a turbine drill carried by the inner string.



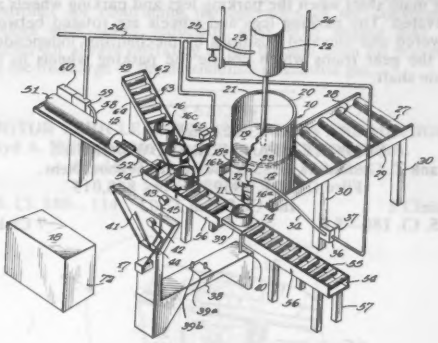
3,623,559
METHOD AND APPARATUS FOR WEIGHT MEASUREMENT
Hugh L. Folkes, St. Leonard's-on-Sea, England, assignor to The Dunlop Company, London, England
Filed Feb. 10, 1970, Ser. No. 10,181
Claims priority, application Great Britain, Mar. 8, 1969, 12,334/69
Int. Cl. G01g *11/14*
U.S. Cl. 177—1 10 Claims



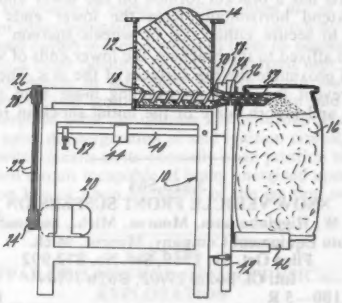
The invention is concerned with the weighing of a belt or similar elongated flexible articles, by supporting the belt at spaced-apart position to provide two portions of different lengths. A load-sensing device is associated with each portion. The force exerted on each load-sensing device includes a force produced by tension in the belt. By arranging for the tension-produced force component to act in the same direction for each load-sensing device, the responses from the load-sensing devices can be combined to cancel out loading of the belt due to tension, to give the actual weight of the belt per unit length. The invention can be used for weight measurement of unloaded belts and similar articles, for control in manufacture for example, and for weight measurement of conveyors carrying freight.

3,623,560
AUTOMATIC INK-WEIGHING MACHINE
Leslie F. Stone, Westchester, Ill., assignor to The Richardson Company, Melrose Park, Ill.
Filed Nov. 10, 1969, Ser. No. 875,021
Int. Cl. G01g *13/00*
U.S. Cl. 177—52 5 Claims

An apparatus for automatically filling containers with viscous materials which employs a piston-pressure system and guillotine-type valve means to feed such material to open-ended containers with negligible spillage and is operated by control means providing automatic delivery of such containers for filling, the cycling of which is designed to maximize the avoidance of spillage.

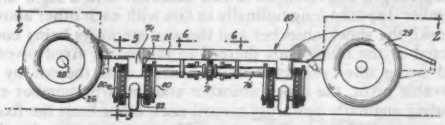


3,623,561
BAG-FILLING MACHINE
John F. Green, Red Oak, Iowa, assignor to Douglas & Lomason Company, Detroit, Mich.
Filed Apr. 27, 1970, Ser. No. 32,250
Int. Cl. G01g *13/08, 13/12*
U.S. Cl. 177—81 4 Claims



An auger-type valve bag-filling machine having an electrical control circuit adapted to operate the auger to fill the bag until a predetermined, but less than the desired total, weight of product is reached, whereupon a timer circuit is energized which then maintains the auger in operation for a timed interval to complete filling of the bag.

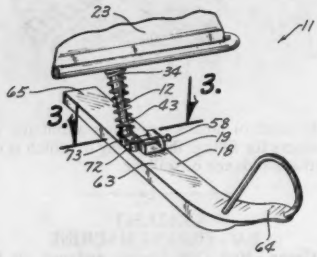
3,623,562
AUTOMOBILE-PARKING SYSTEM
Svatopluk Paul Pitra, 507 East 73 St., New York, N.Y.
Continuation-in-part of application Ser. No. 732,801, May 13, 1968, now abandoned. This application Jan. 2, 1970, Ser. No. 313
Int. Cl. B60s *9/18*
U.S. Cl. 180—1 A 7 Claims



A lateral drive assembly for an automotive vehicle has four parking wheels carried by parking legs which are rotatable

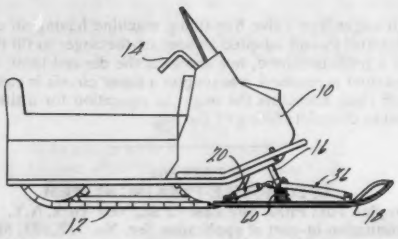
between lowered vertical positions and elevated positions. The parking wheels are operatively coupled to the main drive shaft of the vehicle via gear trains which are disengaged from the main shaft when the parking legs and parking wheels are elevated. The parking legs and wheels are rotated between lowered and elevated positions by mechanisms independent of the gear trains which couple the parking wheels to the main shaft.

3,623,563
SUPPORT MEANS FOR SNOWMOBILES
Frank T. Gostomski, 1053 N. Beech St., Wahoo, Nebr.
Filed Oct. 21, 1969, Ser. No. 868,015
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **7 Claims**



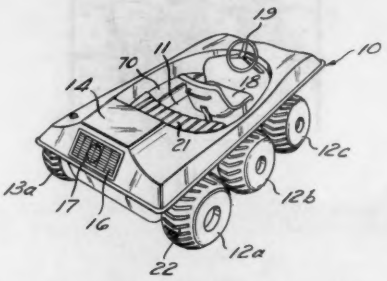
A support means adapted for use with snowmobiles is provided which comprises two laterally aligned support shafts depending from one end of the snowmobile; each of the support shafts has a bracket formed on the lower end thereof. Axles extend horizontally from the lower ends and are adapted to secure either skis or wheels thereon. Resilient plugs are affixed to the brackets, the lower ends of which are disposed proximate the top surfaces of the skis. The resilient plugs prevent the skis from rotating more than a present distance and absorb some of the initial shock in rough terrain.

3,623,564
SNOW VEHICLE FRONT SUSPENSION
William W. Higginbotham, Monroe, Mich., assignor to Monroe Auto Equipment Company, Monroe, Mich.
Filed Oct. 31, 1969, Ser. No. 872,992
Int. Cl. B62m *27/02*; **B62b** *17/04*
U.S. Cl. 180—5 R **12 Claims**



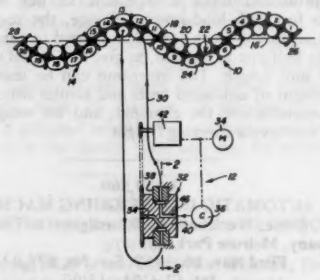
A ski-mounting assembly for snow vehicles and the like comprising a conventional shock absorber and a rigid arm member disposed longitudinally in line with each other above the ski, the shock absorber and the arm members being connected at the outer ends thereof to the ski by fixed pivots, and being interconnected at the inner ends thereof by a movable pivot, the shock absorber and the arm member extending angularly upwardly toward each other from the fixed pivots at a relatively flat angle with respect to the ski, the arm member being supported by a coil spring preferably disposed substantially at the center of the ski, and means being provided on the arm member preferably directly over the spring for attaching the assembly to the snow vehicle.

3,623,565
RECREATIONAL VEHICLE
Eugene T. Ward, Highland Heights; Richard Sklar, Cleveland Heights, and Harvey H. Pierman, Chardon, all of Ohio, assignors to Action-Age, Inc., Warrensville Heights, Ohio
Filed Aug. 4, 1969, Ser. No. 847,119
Int. Cl. B62d *11/08*
U.S. Cl. 180—6.2 **14 Claims**



An all-terrain recreational vehicle as disclosed which is capable of operating on water, on very soft terrain and on rough terrain. Three low-pressure tires are journaled on each side of a watertight fiber-reinforced plastic body. All wheels are driven by a rear mounted engine and steering is accomplished by declutching and braking the wheels on one side or the other of the vehicle. The wheels are journaled directly on the plastic body without separate framing making it possible to have a low operating center of gravity. Overload slip clutches at each wheel prevent excessive strain from being applied to the suspension system or the power-transmission system. A belly pan formed of tough abrasion resistant plastic is mounted on the underside of the vehicle body for impact and abrasion resistance. The transmission system includes parallel chain drives extending along each side of the vehicle, each driven by the engine through a separate clutch and brake mechanism. The clutch and brake mechanisms are selectively operated for steering by hydraulic pressure developed in response to steering wheel movement and are operated simultaneously by a hydraulic-brake system for braking. The engine is mounted on a floating frame to minimize noise and vibration transmission and to provide tensioning of the primary drive chains. The throttle system is arranged for direct actuation in combination with a governor which acts only to prevent overspeeding.

3,623,566
UNDULATING BODY PROPULSION SYSTEM
Arthur Orloff, Nunda, N.Y., assignor to Guthrie B. Stone, Honeoye, N.Y., a part interest
Filed Nov. 14, 1969, Ser. No. 876,902
Int. Cl. B62d *57/00*
U.S. Cl. 180—7 **15 Claims**



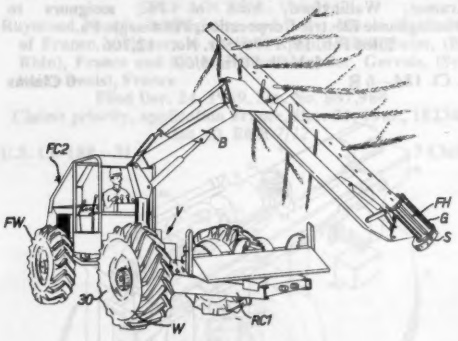
An elongated flexible body undergoes undulations to propel a vehicle frame. A rotating control assembly regulates

longitudinal expansion and contraction of cells into which the body is internally partitioned to produce a sinusoidal configuration changing in phase at a controlled rate relative to the axis of the sinusoidal curvature extending through the center of mass of the body.

3,623,567
COUPLING FOR ARTICULATED VEHICLE INCORPORATING STABILIZER

Ian McKenzie, Etobicoke, Canada, assignor to Canadian International Paper Company; Quebec North Shore Paper Company, Montreal, Quebec and Abitibi St. Anne Paper Ltd., Beaupre, Quebec, Canada, part interest to each

Filed Oct. 27, 1969, Ser. No. 869,651
Int. Cl. B60d 1/00
U.S. Cl. 180—14 R **6 Claims**

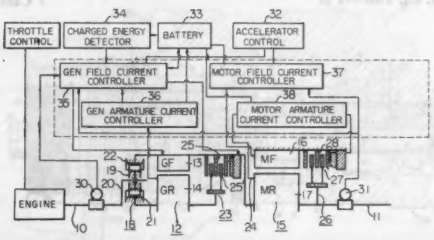


An articulated vehicle having a front and rear chassis interconnected by a coupling which permits movement of the chassis relative to one another about each of a vertical and horizontal axis and spring means interposed between members of the coupling, to resist movement of one chassis relative to the other chassis about a horizontal axis. The coupling for interconnecting the chasses consists of internested inner and outer shell-like housing members having adjacent correspondingly mating surfaces substantially rectangular in cross-sectional view transverse to the length of the vehicle, the adjacent surfaces being provided with enlargements and depressions correspondingly oriented and having a spring material interposed between the members in the space between the enlargements and depressions. The spring member is an elastomeric material and the depressions and enlargements have correspondingly adjacent arcuate outer faces which bear against the elastomeric material.

3,623,568
ELECTROMECHANICAL POWER TRAIN SYSTEM FOR AN AUTGMOTIVE VEHICLE

Yoichi Mori, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed May 29, 1969, Ser. No. 871,816
Claims priority, application Japan, May 31, 1968, 43/37230
Int. Cl. B60l 11/14
U.S. Cl. 180—65 A **1 Claim**

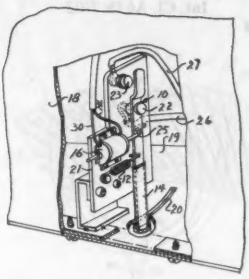


An electromechanical power train system for an automotive vehicle having a driving engine in which an electric generator driven by the engine for generating an electric energy for a battery and an electric drive motor for driving a propeller shaft are incorporated together with an electronic controller for controlling the operation of the constituted devices with speed reduction gear. The engine may be smaller for always operating at full throttle open for preventing the discharge of the detrimental exhausted gas.

3,623,569
MOTOR VEHICLE ANTITHEFT MEANS AND METHOD

Floyd A. Wilkins, 22055 Donald St., East Detroit, Mich.

Filed Dec. 29, 1969, Ser. No. 888,713
Int. Cl. B60r 25/00
U.S. Cl. 180—114 **5 Claims**

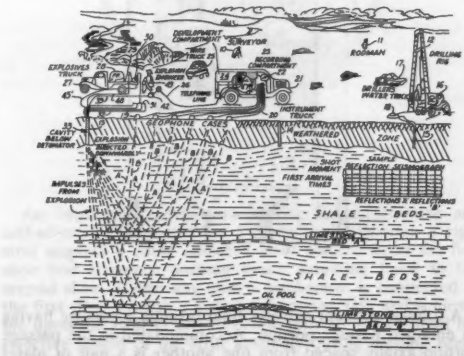


Motor antitheft means and method are disclosed comprising secretly locating a normally open manually actuable electrical switch means on a motor vehicle so that its location thereon is known only to an authorized user of said motor vehicle, electrically incorporating said switch means in the ignition circuit of said motor vehicle so that the latter is rendered incapable of being energized upon use of the ignition key or upon bypassing of the ignition switch by hot wiring until said switch means is actuated from its normally open position to a close position by said authorized user, holding said switch means in said close position upon and during energization of said ignition circuit to maintain said ignition circuit energized until the ignition key is turned to off position, and upon deenergization of said ignition circuit, actuating said switch means to its normally open position to render said ignition circuit incapable of being energized upon use of the ignition key or upon bypassing of the ignition switch by hot wiring.

3,623,570
APPARATUS METHOD OF GEOPHYSICAL EXPLORATION

William P. Holloway, 1404 E. 5th Ave., Austin, Tex.

Continuation-in-part of application Ser. No. 394,358, Sept. 3, 1964, and a continuation-in-part of 504,529, Oct. 24, 1965, now abandoned. This application July 7, 1969, Ser. No. 842,814
Int. Cl. G01v 1/00
U.S. Cl. 181—.5 NC **7 Claims**



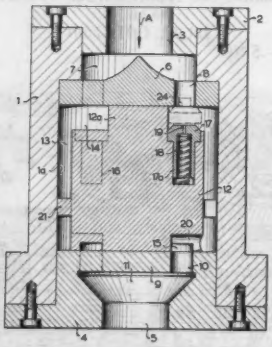
The invention comprises a detonator lowered into water and housing a succession of explosions for emanating energy

waves to pass downwardly into the earth and includes a barrel and sequentially fuel and combustion-supporting gas which are ignited, the explosion creating pressure to open a foot valve to pass therebelow, the valve seat being yieldably urged seated upwardly, a purge valve then admitting purge gas into the barrel to urge the residual burnt products through bleed passage means to condition the barrel for a successive explosion.

3,623,571
STETHOSCOPE
Alan French, Warwick, R.I., assignor to Avid Corporation, East Providence, R.I.
Filed Nov. 13, 1970, Ser. No. 89,254
Int. Cl. A61b *7/02*
U.S. Cl. 181—24 **6 Claims**

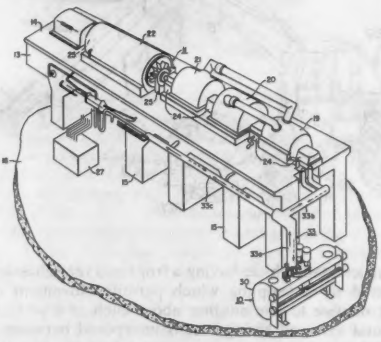
This specification discloses a stethoscope comprising a frame including a pair of arms providing short legs at one end and longer legs at the other end. The longer legs are pivotally connected with a ratchet associated with the pivotal connection to yieldably maintain an adjusted position of the arms. The arms are of plastic and are of an open channel construction provided by a closed U or box cross section. A sound tube of rubber is positioned on the channel of each arm and projects from the end of the short leg with the projecting end carrying an ear piece. The sound tubes enter the channels of the arms at the pivotal connection and there are no sharp or abrupt turns in the tubes from their point of entry to the ear pieces.

3,623,572
SOUND DAMPING ARRANGEMENT
Werner Mrosek, Rheydterstrasse 134, 404 Neuss, Germany
Filed Nov. 19, 1970, Ser. No. 90,915
Claims priority, application Germany, Feb. 19, 1970, P 20 07 527.8
Int. Cl. F16l *55/04;* **F01n** *1/20*
U.S. Cl. 181—47 A **11 Claims**



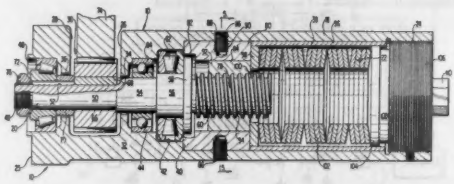
A tubular element conveys fluid through a passage having an enlarged passage portion. Accommodated in the passage portion axially spaced from one another is a pair of plates each provided in the respective outer margin with a concentric annulus of apertures. An insert is accommodated between the plates and defines with the wall of the element an annular clearance. Its respective end faces face the plates and are each provided with recesses communicating with the clearance and with one of the apertures. A plurality of depressions are provided in the upstream one of the endfaces and register with respective apertures and a plurality of closing members are each received in one of the depressions closing the same except for a reduced cross-sectional area. Biasing means yieldably biases the respective closing member into closing position in which it resiliently closes partially the respectively associated aperture.

3,623,573
LUBRICATION SYSTEM
Michael Csanady, Jr., Ridley Park, and Frederick W. Kramer, Wallingford, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 19, 1970, Ser. No. 12,706
Int. Cl. F01m *5/00*
U.S. Cl. 184—6 R **6 Claims**



A lubrication system for a machine, having bearings rotatably supporting one or more journals, such as in a turbine or generator. The system comprises a lubricant reservoir having an open top portion and closed side and bottom portions. The reservoir may be a cylindrical reservoir or an underground reinforced concrete reservoir which would be lined with a material impervious to the oil. The lubricant conduits are cut and fitted outside of an independent of the reservoir. The conduits and pumping equipment are then mounted on inner and outer surfaces of a plate to form a unitary plate structure. The plate structure is lowered onto a shelf portion surrounding the open portion of the reservoir. The conduits inside of the reservoir are secured by adjustable supports to the reservoir. The plate structure is detachably secured to the reservoir thereby enclosing the reservoir.

3,623,574
COUNTERBALANCE MECHANISM
Robert L. Gardner, Gulf Breeze, Fla., assignor to Vitro Corporation of America, New York, N.Y.
Filed Nov. 19, 1969, Ser. No. 877,907
Int. Cl. F16d *65/00*
U.S. Cl. 188—1 R **7 Claims**



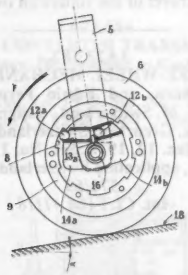
A counterbalance mechanism that achieves its counterbalancing force by the rotation of a shaft which places load

upon a spring column. A screw-type drive moves a block axially along the shaft to compress the column, thereby imposing the counterbalance load. This screw-type drive, therefore, limits the application of the counterbalancing force to only one direction of rotation, corresponding to placing a load on the spring column. Also, the counterbalancing force increases in proportion to the number of revolutions the shaft is rotated. The counterbalancing mechanism is ideally suited to oscillating loads, such as the movement of a radar antenna, so that when the antenna moves in one direction, away from its neutral position, one of a pair of counterbalance mechanisms can provide the counterbalancing force; while, when the antenna rotates in the opposite direction, the other of the pair of counterbalancing mechanisms can provide the opposite counterbalance force.

3,623,575
SELF-LOCKING WHEEL

Raymond Joseph, Schiltigheim, and Roger Manin, Paris, both of France, assignors to Ateliers Reunis Schiltigheim, (Bas-Rhin), France and Guitel Etienne-Mobilor, Gervais, (Seine Saint-Denis), France

Filed Dec. 24, 1969, Ser. No. 887,968
Claims priority, application France, Dec. 31, 1968, 182347
Int. Cl. B60t *7/12*
U.S. Cl. 188—31 **7 Claims**

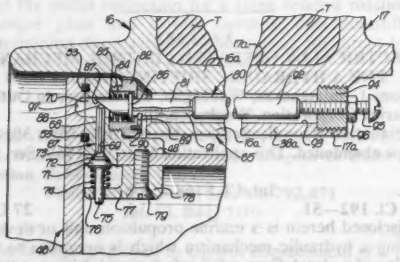


A wheel for a vehicle which incorporates an automatic locking device comprising two movable locking members. The body of said wheel comprises a space containing said locking members normally disposed on either side of a vertical plane containing the wheel axis, said locking members being mounted for free movement on a support rigid with the wheel support, for example, its mounting strap or fork, a series of notches being provided on the other hand along the outer periphery of said space containing said pair of locking members so as to receive one or the other locking member when said locking member is caused to move in one or the other direction by gravity as a consequence of the inclination of their support beyond a certain angle to the vertical.

3,623,576
COOLING SYSTEM FOR WHEELS AND BRAKES OF AIRPLANE LANDING GEAR

Richard C. Waring, Pittsburg, Calif.; Earle B. Williams, Everett, Wash., and Loren H. Williams, Sacramento, Calif., assignors to Inventors Associates, Pittsburg, Calif.

Filed July 23, 1969, Ser. No. 843,988
Int. Cl. F16d *65/84*
U.S. Cl. 188—71.6 **26 Claims**



A cooled wheel and brake assembly in which a container for a coolant is combined with the assembly, a gaseous coolant being discharged through expansion chambers to cool the wheel assembly, the coolant discharge being under the control of valves which are operated by heat-responsive actuators, the coolant being released into the expansion chambers on demand.

3,623,577
CORRUGATED ROTOR FOR DISK BRAKES

Ronald S. Scharlack, San Antonio, Tex., assignor to Kelsey-Hayes Company

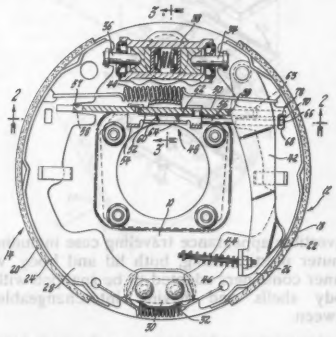
Filed Nov. 13, 1969, Ser. No. 876,547
Int. Cl. F16d *65/84*
U.S. Cl. 188—71.6 **6 Claims**

A disk brake assembly having two embodiments of rotors each of which provides a plurality of separate braking surfaces with airgaps disposed between the braking surfaces. The braking surfaces and airgaps are disposed at an angle to the edge of the brake pad so that the brake pad edge is always in contact with at least two of the braking surfaces.

3,623,578
COMBINED SELF-ADJUSTER AND PARKING BRAKE ACTUATING MECHANISM

Robert W. Plume, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 1, 1970, Ser. No. 51,526
Int. Cl. F16d *65/54*
U.S. Cl. 188—79.5 P **2 Claims**

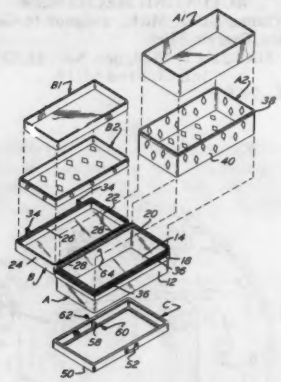


An improved combination parking brake actuating and self-adjuster mechanism for a drum brake wherein a rigid strut engages a cable operated lever pivoted upon the first shoe and transmits parking brake actuating force to the second shoe. A one-way clutch mechanism is connected to the first shoe through a lost motion connection and is movable upon the strut in one direction only so as to extend the effective length of the strut assembly during parking brake actuation and thereby reposition and hold the shoes in further apart relationship to adjust for lining wear.

3,623,579
FABRICATED ROTOR FOR A DISK BRAKE ASSEMBLY
Paul G. Hendrickson, Ann Arbor, and Earl W. Elster, Allen Park, both of Mich., assignors to Kelsey-Hayes Company
Filed Sept. 26, 1969, Ser. No. 861,321
Int. Cl. F16d *65/12*
U.S. Cl. 188—218 XL 4 Claims

A disk brake assembly embodying a ventilated, fabricated rotor. The rotor is made up of three formed pieces. The first two pieces form oppositely facing annular braking surfaces and the third piece is corrugated, holds the other two pieces together and forms with these pieces a number of radially extending cooling air gaps.

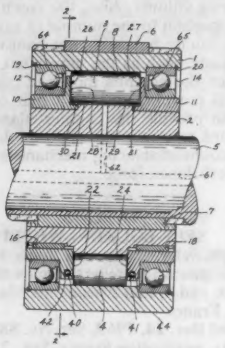
3,623,580
CONVERTIBLE APPEARANCE TRAVELING CASE
Benjamin E. Toller, 109 Roberts Road, Brookhaven, Pa.
Filed Feb. 17, 1970, Ser. No. 12,055
Int. Cl. A45c *3/00, 3/08*
U.S. Cl. 190—41 C 6 Claims



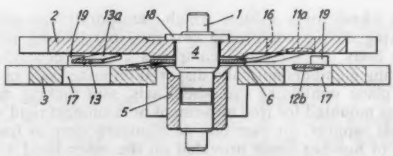
A convertible appearance traveling case including a transparent outer plastic casing, both lid and body, with interfitting inner containers adapted to be snapped within the lid and body shells and having interchangeable sheaths therebetween.

3,623,581
OVERRUNNING DEVICE
William G. Livezey, 719 East Kessler Blvd., Indianapolis, Ind.
Filed Sept. 14, 1970, Ser. No. 71,697
Int. Cl. F16d *41/07*
U.S. Cl. 192—45 9 Claims

Herein disclosed is a cam and roller-type of overrunning device which may be used as either a clutch or brake. The device includes a full compliment of interspersed long and short rollers and a cam whose cam faces each have a composite contour for camming the rollers which are normally biased toward engagement by tickle springs operating on the long rollers. The composite contour has a constant or decreasing angle of attack for overrun and an increasing angle of attack for engagement with backstops being provided for limiting travel of the rollers on overrun.



3,623,582
FREE-WHEEL MECHANISM
Urs Giger, Solothurn, and Edwin Fernand Jakob-Schild, Grenchen, both of Switzerland, assignors to Eta A. G. Ebauches-Fabrik, Grenchen, Switzerland
Filed Jan. 12, 1970, Ser. No. 2,270
Claims priority, application Switzerland, Jan. 16, 1969, 571/69
Int. Cl. F16d *41/18*
U.S. Cl. 192—46 4 Claims



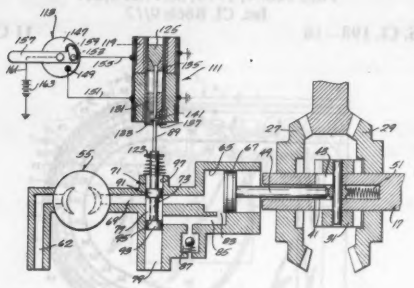
A freewheel mechanism with a pair of coaxial wheels and yielding wedging members cooperating with indentations of the wheels and interlocking the latter for rotary motion when the driving wheel moves in one direction, while allowing the driving wheel to rotate alone freely in the reverse direction. The wedging members are themselves rigid and form part of a single punched piece inserted between the wheels on their common arbor and comprising a hub portion and resilient radial arms, each of which connects a wedging member to the hub portion. Each radial arm has built-in torque and is merely subjected to a pull when the wedging member carried thereby transmits a torque from the driving wheel to the driven wheel.

3,623,583
ELECTRICALLY OPERATED CONTROL MECHANISM FOR A HYDRAULIC SHIFTING MECHANISM
William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Continuation of application Ser. No. 627,106, Mar. 30, 1967, now abandoned. This application Mar. 10, 1969, Ser. No. 809,465
Int. Cl. F16d *25/061*
U.S. Cl. 192—51 27 Claims

Disclosed herein is a marine propulsion unit or device including a hydraulic mechanism which is operative to effect shifting of a clutch from a fail-safe forward drive condition to either of a neutral or reverse condition. Also disclosed herein

is an electrically operated control mechanism for the hydraulic mechanism, which control mechanism is also designed to fail safe in forward drive.

The control mechanism includes aligned, neutral and rear-



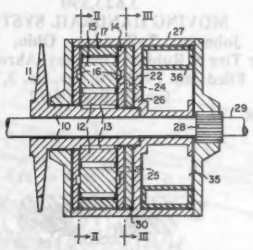
ward drive solenoids which are selectively energizeable to afford neutral and reverse drive and which are operably associated with a single plunger carrying a spool valve embodied in the hydraulic system.

3,623,584

TORQUE CONVERTER TRANSMISSIONS

Charles L. Hill, Olney, Ill., assignor to Cash Baron Corp., Olney, Ill.

Filed Aug. 13, 1970, Ser. No. 63,389
Int. Cl. F16d *31/04, 31/08*
U.S. Cl. 192—56 F **7 Claims**



A torque converter transmission comprising input and output shafts with a primary gear connected for rotation with the input shaft and a torque plate connected through a calibrated torque spring to a driven member connected to the output shaft. One or more fluid pump gear means are rotatably mounted on the torque plate and meshed with the primary gear to cause the torque plate to rotate with the primary gear when the pump gear is restrained from rotation. The torque spring permits limited relative rotation between the torque plate and the driven member and such rotation controls the restriction in the hydraulic circuit between the outlet port of the pump means and a reservoir of hydraulic fluid so that for a predetermined maximum input torque, the pump gear is restrained from rotation. A movable control valve plate is interposed in the outlet restriction to adjustably control the outlet restriction for a given relative rotation of the torque plate and driven member, thus controllably predetermining the maximum input torque for direct transmission between input and output shafts.

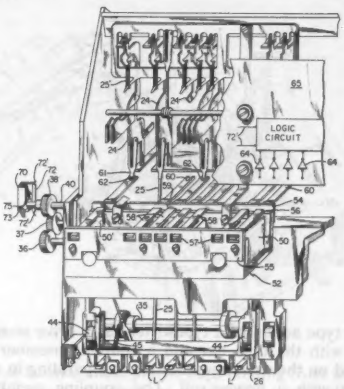
3,623,585

KEYBOARD PRINTER CHARACTER SELECTION UNIT

Roy G. Mason, Mountainview, Calif., assignor to Datel Corporation, Falls Church, Va.

Filed Jan. 21, 1969, Ser. No. 792,471
Int. Cl. B41j *5/30*
U.S. Cl. 197—19 **5 Claims**

In the linkage employed to control displacement of a print head for a keyboard printer to advance different characters into the printing position, an electromagnetic character selection unit is mounted in direct association with the linkage to control displacement of the print head through energization of a selected combination of solenoids over a limited time interval of each print cycle. Armature plates in the selection unit are quickly and accurately responsive to energization of the solenoids in activating the linkage, and the



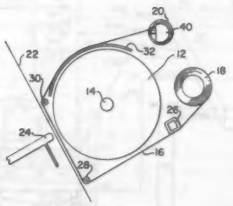
need for separate restoring elements or holddown mechanisms is avoided by an electronic switch which is correlated in opening and closing with the print cycle timing member whereby the solenoids can be deenergized well in advance of the end of each cycle and be self-restoring ahead of the next cycle.

3,623,586

RIBBON SPOOL

Orville H. Shellabarger, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Aug. 27, 1969, Ser. No. 853,348
Int. Cl. B41j *35/00;* **B65h** *75/28*
U.S. Cl. 197—175 **12 Claims**

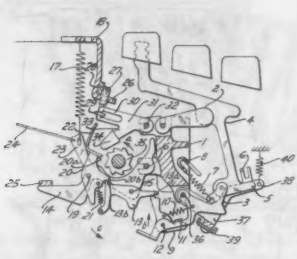


A clamping device for securing and maintaining in position the leader of a ribbon or the like in a tubular spool wherein the clamping action is derived from the interengagement of a core and a plurality of camming surfaces in the spool, the core being freely rotatable within the spool. The spool has, formed in its wall, a longitudinal slot for receiving the ribbon leader, and an adjacent indent portion adapted to cam the core against an inside surface of the spool and also against the indent portion for the length of the leader. The leader is held between the camming surfaces of the spool and the core by reason of the pulling forces on the leader as the spool is rotated, there also being additional slots in the spool cooperating with spacers for initiating release of the ribbon from the spool.

3,623,587
TYPE ACTION DRIVE

Manfred Link, Nurnberg, Germany, assignor to Triumph Werke Nurnberg AG, Nurnberg, Germany

Filed Apr. 18, 1969, Ser. No. 817,376
Claims priority, application Germany, Apr. 20, 1968, P 17 61 226.9
Int. Cl. B41j *23/06*
U.S. Cl. 197—17 10 Claims

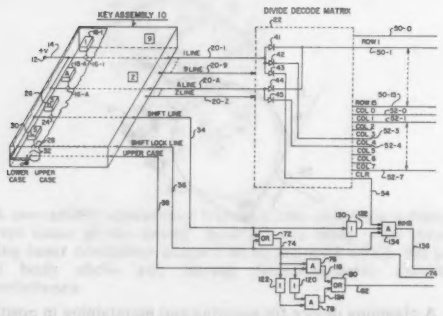


Each type action of a typewriter has a drive member connected with the type bar and a coupling member pivotally mounted on the drive member and cooperating in a coupled position with a power roll. The coupling member has a camming surface cooperating with an adjustable guide means mounted on the supporting frame of the typewriter, and camming the coupling member out of engagement with the power roll. By adjustment of the guide means different impacts of the type bar can be obtained, as required by types having different surface areas, or if particularly great numbers of copies have to be made.

3,623,588
ELECTRONIC KEYBOARD WITH UPPER- AND LOWER-CASE CAPABILITY

Ronald Thomas Prodan, Rowayton, Conn., assignor to The Bunker-Ramo Corporation, Canoga Park, Calif.

Filed Apr. 1, 1969, Ser. No. 812,204
Int. Cl. B41j *25/24*
U.S. Cl. 197—71 6 Claims

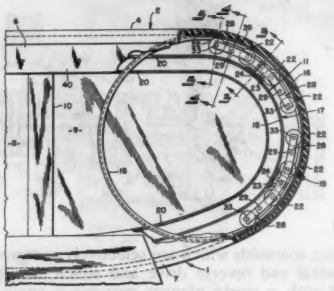


An electronic keyboard with upper- and lower-case capability which utilizes the same decode circuit for both cases. The shift operation is accomplished by the modification of a single bit from the decoder output. The shift operation may be inhibited under selected conditions, such as when a nonalphabetic key is depressed while the keyboard is in a shift-lock condition. The keyboard may also be switched from a state where it normally generates upper-case characters to a state where it normally generates lower-case characters and the code output from the keyboard may be easily altered.

3,623,589
ROTATING SUPPORT MEMBER FOR MOVING HANDRAIL

Ernest D. Johnson, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 4, 1970, Ser. No. 8,447
Int. Cl. B66b *9/12*
U.S. Cl. 198—16 11 Claims

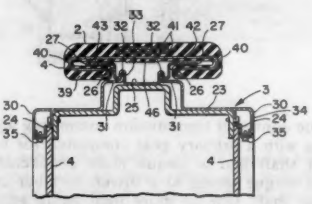


Handrail support member located at ends of balustrades consists of a hoop or rim which rotatably supports the handrail during movement between its upper and lower runs. Each hoop is supported by a plurality of rollers which may be rigidly mounted on the newel support frame or suspended therefrom by load equalizing lever arms to obtain a more uniform distribution of bearing pressure around the inner periphery of the hoop thus reducing contact stresses.

3,623,590
MOVING HANDRAIL SYSTEM

Ernest D. Johnson, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 19, 1970, Ser. No. 3,795
Int. Cl. B66b *9/12*
U.S. Cl. 198—16 16 Claims



A moving handrail system for a passenger conveyor in which the handrail has hinged edges folded under flanges of a balustrade guide member with the edges of the handrail being retained in position by supporting plates. The handrail is driven by a sheave having a circumferential rib extending between the edges and engaging a driving face of the handrail. The hinged construction provides for bending and flexing the handrail in either direction as it passes around a drive sheave and takeup sheaves.

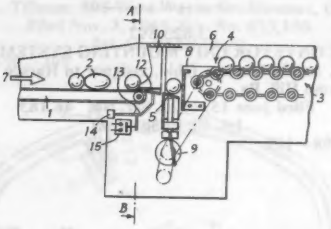
3,623,591
DEVICE FOR ORDERING ROLLABLE ARTICLES, DELIVERED IN A DISORDERED DELIVERY FLOW

Heinrich Koch, Bad Salzuflen; Kurt Hermsmeier, Obernbeck, and Karl-Heinz Northoff, Herford, all of Germany, assignors to Henry Y. Kuhl and Paul R. Kuhl, Flemington, N.J.

Filed June 10, 1969, Ser. No. 831,906
Claims priority, application Germany, June 11, 1968, P 17 56 576.3
Int. Cl. B65g *47/00*
U.S. Cl. 198—24 13 Claims

This invention relates to devices for ordering rollable articles, such as eggs, delivered from a disordered delivery flow

by means of angled lifting plates which lift one article at a time out of the delivery stream to a point at which they can roll over the top of a guide wall onto a subsequent conveyor. The lifting plates are specially shaped so as to lift only one



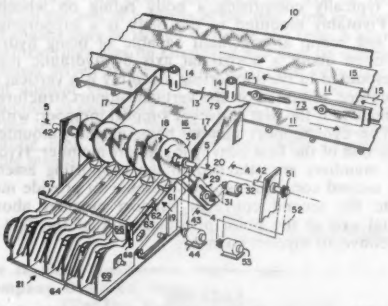
article at a time and a common drive is provided for the lifting plates and a subsequent conveyor. Control means is provided for preventing operation of the drive until all lifting plates have articles thereon.

3,623,592

FRUIT FEED SYSTEM AND METHOD

Earl R. Anderson, Los Gatos, Calif., assignor to Brex Corp., Los Gatos, Calif.

Filed July 18, 1968, Ser. No. 748,134
Int. Cl. B65g 47/26
U.S. Cl. 198—30 11 Claims



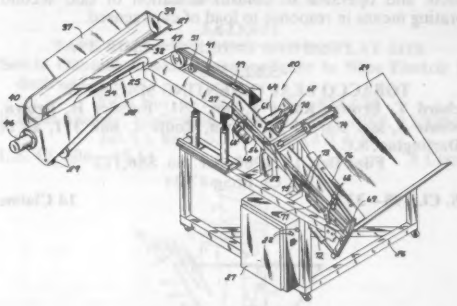
A fruit feed system comprising a bulk supply conveyor for rollable fruit articles from which fruit is fed through a discharge opening past a bridge preventing means into an inclined hopper or tray. A row of fruit is elevated from this tray and presented to a selective fruit admitting and rejecting mechanism comprising wobble plates which reject any fruit in the row presented to it which is not properly aligned with one of the passages through the wobble plate system, and admits only one fruit between each pair of wobble plates for feeding thereby on demand to the feed end of one of a plurality of single-file fruit feed mechanisms which incorporate means for feeding one fruit at a time from the discharge end thereof to a suitable processing mechanism such as a grader, a pitter or the like. Means is provided for selectively blocking any one of the single-file feed mechanisms, and when this occurs, the fruit is maintained in the row in an agitated condition, and the fruit between the wobble plates remain in place in agitated condition, ready to feed on demand. Subsequent fruit is presented repeatedly to the wobble plates for admission but no feed occurs when no fruit is in demand. The system includes means for determining the beginning of operation of the wobble plates, and optionally selecting the amount of "wobble" provided by oscillation of the wobble control means.

3,623,593

DEVICE FOR ORIENTING AND STACKING FRUSTOCONICAL ARTICLES

Hugh Van Melle, Islington, Ontario, and Herbert Rees, Toronto Willowdale, Ontario, both of Canada, assignors to Husky Manufacturing & Tool Works Limited, Toronto, Ontario, Canada

Filed Mar. 16, 1970, Ser. No. 19,798
Int. Cl. B65g 47/24
U.S. Cl. 198—33 7 Claims



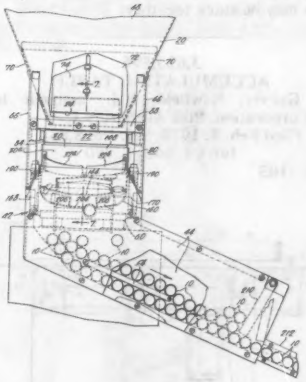
A series of frustoconical plastic cups coming from an injection-molding machine alight on a vibratile trough directing them onto a pair of ascending, parallel conveyor belts between which they are suspended with their smaller end down. At the output end of the conveyor the belts are twisted and spread apart to release the cups which are picked up by a vibratile chute for stacking against an end stop. The latter may be preceded by a detent retractable under the control of a photocell, disposed upstream along the chute, which detects the trailing end of a stack of cups and closes a gate to prevent the advance of further cups past the cell while a lifting fork raises the stack to the level of an adjoining table onto which the stacked cups are swept by a swingable arm. The trough may be tiltable into a reverse position to guide scrap away from the elevating conveyor at the beginning of a series of molding operations.

3,623,594

CAP-FEEDING APPARATUS

Jacob Ravn, and David McArel, both of Phoenixville, Pa., assignors to The West Company, Phoenixville, Pa.

Filed Oct. 23, 1969, Ser. No. 868,750
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AA 9 Claims



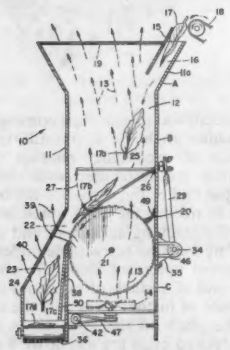
Cap-feeding apparatus for caps having a top and a skirt depending from the outer edge of the top comprising a hopper section for caps disposed in a random fashion and having a discharge opening, a discharge tray disposed below said discharge opening, first vibrating means for effecting actua-

tion of said discharge tray, a selector tray below said discharge tray for receiving caps discharged from said discharge tray, said selector tray including first orientation means for orienting all of the caps in a top-up or top-down position and second orienting means operable to reposition caps so that all caps discharged from said selector tray are oriented in the same way, an accumulator section to receive caps from the selector tray, second vibrating means for effecting vibration of said selector tray and effect discharge of caps to said accumulator section, and sensing means in said selector tray and accumulator section, for sensing caps therein and operable to control actuation of said second vibrating means in response to load of caps sensed.

3,623,595
TOBACCO LEAF ORIENTING MACHINE

Richard T. Brown, Route 4, Box 251; Burnice H. Brown, Route 4, and Harold D. Brown, Route 4, Box 311, all of Darlington, S.C.

Filed Dec. 18, 1969, Ser. No. 886,112
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 R **14 Claims**

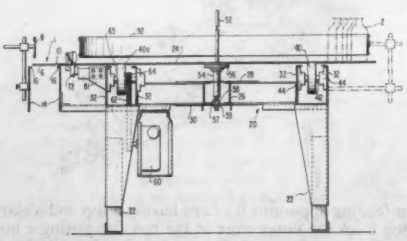


A vertically elongated chamber has a current of air blowing upwardly therethrough so that leaves deposited into the chamber are subjected to a combined effect of gravity and airflow and heavy stems of the leaves are thus oriented downwardly; conveyor means in the chamber translate the leaves laterally so that the leaves move, stem first, through an outlet passage at one side of the lower portion of the chamber. The leaves then fall onto a discharge conveyor with their stems oriented in the same direction. A zone of reduced pressure at the upper end of the chamber prevents the leaves being blown out the top of the chamber. Kicker means within the chamber above the conveyor means aid in separating leaves which may be stuck together.

3,623,596
ACCUMULATING TABLE

Francis J. Garvey, Newfield, N.J., assignor to Garvey Products Corporation, Blue Anchor, N.J.

Filed Feb. 5, 1970, Ser. No. 8,854
Int. Cl. B65g *37/00*
U.S. Cl. 198—103 **9 Claims**

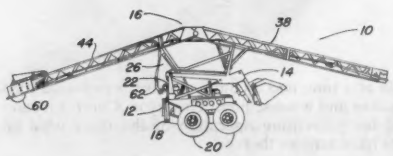


In a rotary accumulating table, a relatively thin and flexible metallic disk is rotated on a vertical axis and at its point of tangency to a supply conveyor peripherally spaced rollers bear respectively on the upper and under surfaces of the disk to flex its margin into accurate coplanar level with the conveyor surface. The disk is supported by a set of other rollers which are peripherally spaced around the disk margin and are mounted on radially directed brackets which are interchangeable in different lengths to permit ready substitution of disks of different diametric sizes.

3,623,597
CONVEYOR UNIT MOUNTING SYSTEM

Charles J. Arndt, Marion, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.

Filed June 15, 1970, Ser. No. 46,183
Int. Cl. B65g *41/00*
U.S. Cl. 198—109 **7 Claims**

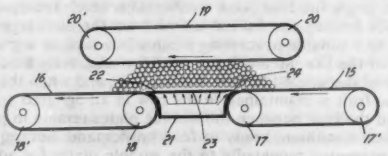


An improved conveyor system for conveying building materials such as brick, stone, roofing materials, mortar, concrete mix and the like includes first and second conveyor support members pivotably joined at one end of each to form a conveyor unit which may be folded at approximately its center. A mechanically spliced conveyor belt is supported by both the first and second conveyor support members and is driven in continuous movement by an appropriate drive means. The conveyor unit is mounted on a front-loading vehicle typically comprising a body riding on wheels or treads. Pivotably mounted to the body is a supporting assembly and scoop arrangement capable of being hydraulically rotated about a horizontal axis by hydraulic means. Firmly mounted to the supporting assembly is a vertical support structure. Mounted on the vertical support structure adjacent one end is the first conveyor support member; with the second conveyor support member being partially mounted to the same end of the first conveyor support member. Hydraulic jack members are attached to the supporting assembly and the second conveyor support member to provide means to rotate the second conveyor support member about a horizontal axis at the point of attachment of the first and second conveyor support member.

3,623,598
GUIDING MEANS FOR CONVEYING ROD-SHAPED OBJECTS AND ESPECIALLY CIGARETTES

Henri Anfossi, Orleans, Loiret, France, assignor to Service D'Exploitation Industrielle Des Tabacs Et Des Allumettes, Paris, France

Filed July 24, 1968, Ser. No. 747,133
Claims priority, application France, July 25, 1967, 115545
Int. Cl. B65g *15/14*
U.S. Cl. 198—165 **4 Claims**



A method for ensuring the cohesion of a stream of rod-shaped objects and especially cigarettes comprising a plurality of adjacent layers of the said objects and for permitting the displacement of the said stream by propulsion means which

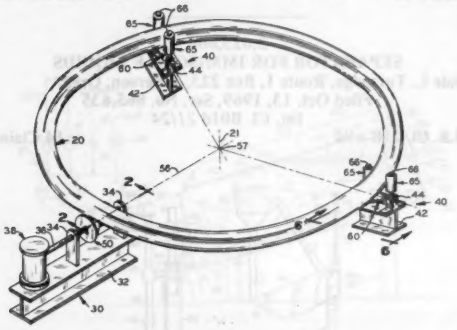
are adapted to produce action solely on one of the two outer layers comprising the step of exerting a pressure of fluid on the other outer layer in the direction of the first of the said layers.

3,623,599

NONSLIPPING ROLLER SUPPORTS FOR A ROTATABLE RING

Donald L. Tillman, 805 West Wayne St., Maumee, Ohio

Filed Nov. 3, 1969, Ser. No. 873,180
Int. Cl. B65g *29/00*
U.S. Cl. 198—209 **18 Claims**



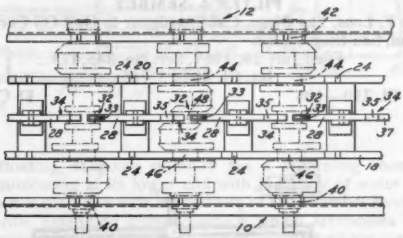
An apparatus for supporting and guiding a rotatable ring of polygonal cross section comprising at least one V-type shaped roller-supporting means and at least two other roller-supporting means angularly spaced around the circumference of the ring. The one V-type shaped roller means has two radially spaced nonslipping pure rolling points of contact between its conical flanges and the ring so that a straight line through these two points intersects the axis of the roller means on the axis of rotation of the ring. One or more of the roller means may be driven to rotate the ring. A plurality of concentric rings may be employed and may be commonly or separately driven at either the same angular velocity or at different angular velocities. The rings may be hollow for the conduction of electricity and/or fluids to stations mounted on the ring or rings, and the ring may have lugs or flanges for operating limit switches, cams and/or the engagement of braking means.

3,623,600

CONVEYING AND STORING SYSTEM FOR ELONGATED ARTICLES

Bryce D. Dell, Woodhaven, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 8, 1969, Ser. No. 882,942
Int. Cl. B65g *25/04*
U.S. Cl. 198—219 **7 Claims**



Crankshafts for reciprocating engines are transported and stored by a mechanical conveyor. The conveyor is made up of a pair of stationary side members that have a plurality of inclines separated by a plurality of risers on the upper surfaces thereof. A pair of vertically movable intermediate members are located between the side members. The intermediate members also have a plurality of inclines separated from each other by risers, and the inclines thereof are positioned to overlap the risers of the side members. Vertical movement of the intermediate members moves the crankshafts along the conveyor. Blocking mechanisms attached to the intermediate members prevent the crankshafts from moving to the succeeding riser when a crankshaft already is located on the succeeding riser.

ERRATUM

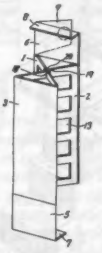
For Class 206 see:
Patent No. 3,624,832

3,623,601

TAPE ROLLS HOLDING AND DISPLAY BOX

Seiichi Okutani, Osaka, Japan, assignor to Nitto Electric Industrial Co., Ltd.

Filed Nov. 6, 1969, Ser. No. 874,652
Claims priority, application Japan, Nov. 14, 1968, 43/83637
Int. Cl. B65d *5/50, 5/52;* **A47f** *1/14*
U.S. Cl. 206—45.14 **5 Claims**



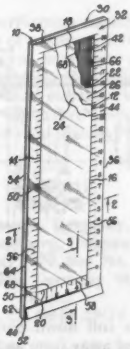
A selectively openable and closeable display box or carton for holding a plurality of rolls of tape for display. The carton has a front panel with a plurality of window openings therein and a back panel provided with a corresponding plurality of window openings. A fold line is provided along the longitudinal center portion of each of the front and back panels across the series of window openings. Sidewalls connect the opposite ends of the front and back panels along integral corner folds of the carton. The front and back panels are adapted to fold inwardly along their respective longitudinal fold lines, whereby they are moved toward each other and releasably held with their fold lines adjacent one another so that rolls of tape can be held in the opposed window openings.

3,623,602

COMBINATION PACKAGE AND TEMPLATE FOR THIN-LAYER CHROMATOGRAPHIC PLATE

Anthony S. Valente, Bernardsville, N.J., assignor to Quantum Industries, Inc., Fairfield, N.J.

Filed Oct. 8, 1969, Ser. No. 864,817
Int. Cl. B65d *73/00;* **B01d** *15/08;* **G01n** *31/08*
U.S. Cl. 206—46 R **10 Claims**



A thin-layer chromatographic plate is packaged between a backing member and a pliable plastic film adhered to mar-

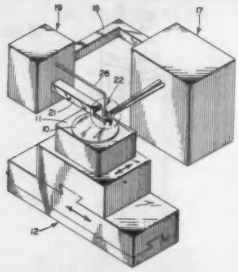
ginal portions of the backing member around the perimeter of the plate, the marginal portions of the backing member carrying indicia including a spotting guide juxtaposed with an end of the plate and a migration gauge juxtaposed with at least one side of the plate.

3,623,603

MAGNETIC IDENTIFICATION AND SEPARATION OF SMALL PARTS

Bernard G. Casner, Emmaus; Ray T. Goulstone, Allentown, and Peter R. Hance, Allentown, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Original application Aug. 31, 1967, Ser. No. 664,703, now Patent No. 3,572,400. Divided and this application Jan. 9, 1970, Ser. No. 7,292
Int. Cl. B07c *5/344*
U.S. Cl. 209—74 4 Claims



In the manufacture of a number of small parts, selected areas of the surface of a sheet are inspected and defective areas are magnetically identified with a specially formulated, relatively high-viscosity magnetic fluid. The sheet is the divided into a number of small parts and those parts formed from defective areas of the sheet are magnetically separated from the remaining parts.

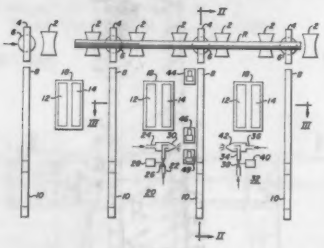
In this method, air pressure is applied to a free piston located within the barrel of a pen that forces the magnetic fluid through the capillary tip of the pen onto the selected surface areas. Methods and apparatus are provided for controlling the size and shape of the magnetic mark.

3,623,604

STRAIGHTNESS MONITOR

William L. Roberts, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation

Filed Apr. 6, 1970, Ser. No. 25,809
Int. Cl. B07c *3/12*
U.S. Cl. 209—80 5 Claims



Lengths of rounds roll down parallel runners and over tolerance strips spaced away from and parallel to the plane of the runners. Out of straightness sections of the rounds contact the tolerance strips actuating circuitry for marking the length as to its straightness tolerance.

3,623,605

PROCESS FOR THE FLOTATION OF FLUORITE

Giovanni Perri, and Gianfranco Aquili, both of Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Jan. 9, 1970, Ser. No. 1,851
Claims priority, application Italy, Jan. 9, 1969, 11310A/69
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 7 Claims

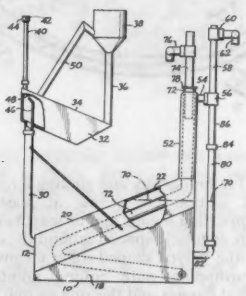
Improvement in flotation of calcium fluoride from clay-containing ores which comprises conditioning the flotation slurry with an alkyl phenol ethoxide and a fatty acid ethoxide prior to adding the usual flotation reactants. Flotation slurry may be prepared from common calcium fluoride crude ore or from clay slime discarded from prior flotation processes.

3,623,606

SEPARATOR FOR IMMISCIBLE LIQUIDS

Dale L. Turnidge, Route 1, Box 223, Jefferson, Oreg.

Filed Oct. 13, 1969, Ser. No. 865,635
Int. Cl. B01d *21/24*
U.S. Cl. 210—94 14 Claims



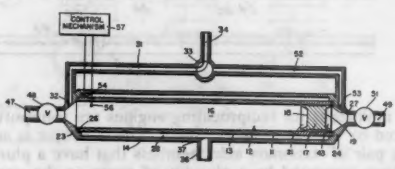
An inverted trough forms the top of or is housed in a container and is inclined upwardly from its infeed end to its outfeed end. The infeed end of the trough communicates with a source of a mixture of immiscible liquids to be separated, through an infeed conduit assembly which includes a gas bleed and an infeed rate monitor. The outfeed end of the trough communicates within an outfeed conduit for delivering the separated lighter density liquid to storage. A transparent interface-monitoring conduit interconnects the container below the outfeed end of the trough and the outfeed conduit above the outfeed end of the trough, for visual inspection of the interface of the immiscible liquids. A vertically adjustable drain conduit extends from the bottom of the container to an elevation above the trough but below the outlet end of the outfeed conduit, for adjusting the elevation of said interface.

3,623,607

FILTER ASSEMBLY

John F. Loos, San Diego, Calif., assignor to Gulf Oil Corporation, San Diego, Calif.

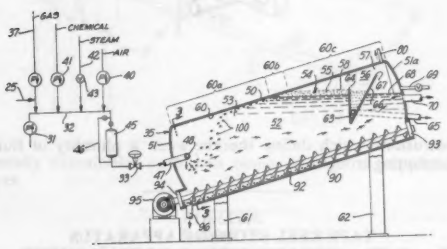
Filed July 28, 1969, Ser. No. 845,473
Int. Cl. B01d *35/16*
U.S. Cl. 210—106 11 Claims



A self-cleaning filter assembly is described including a free piston which moves periodically to clean a surface of the

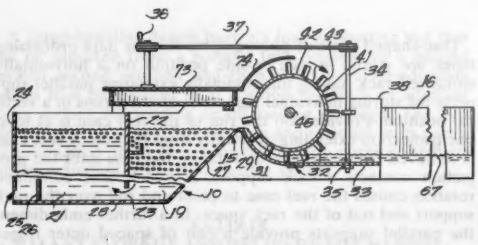
filter element, or to flush concentrated fluids or solids from the filter assembly. Movement of the piston is accomplished automatically by a valve arrangement which directs pressurized fluid to an appropriate side of the piston.

3,623,608
WATER CLARIFIER AND SEPARATOR
Logan C. Waterman, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.
Original application Oct. 31, 1968, Ser. No. 772,081. Divided and this application Feb. 20, 1970, Ser. No. 12,916
Int. Cl. C02c *1/30*
U.S. Cl. 210—221 18 Claims



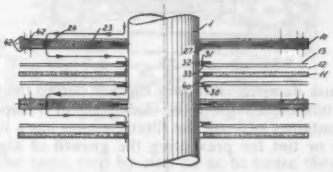
A clarifier for oil-contaminated water from a desalter or other source, the water being clarified by gas flotation effected in a closed vessel having an upper-inclined wall guiding the oily waste material to a collection zone of the vessel without the use of mechanical surface skimmers. The flotation is usually effected at a pressure other than atmospheric. The oily waste material and the separated gas may be further treated for recovery of valuable products, as by being returned to the desalter or to refinery equipment.

3,623,609
SKIMMER FOR SEPARATING FLOWING LIQUIDS FROM WATER
John A. Ainlay, 3330 Grant St., Evanston, Ill.
Filed Dec. 2, 1969, Ser. No. 881,396
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 17 Claims



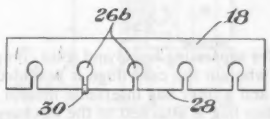
A floating, seagoing skimmer has a separating chamber communicating at its lower end with the body of water into which it is placed, a weir at the front of the chamber having a forwardly extending curved surface which terminates in a skimming edge and a rotating vaned impeller whose path of movement is disposed relatively closely to the curved surface of the weir so as to carry the combined floating liquid and water over the weir and into the separating chamber. The top of the weir is substantially above the water surface so as to create a hydrostatic head for causing waterflow out of the bottom of the chamber and the number of vanes in the impeller, its speed of rotation and its depth of penetration are such as to move the combined floating liquid and water with a minimum of turbulence. The skimming edge ahead of the weir is adapted to be held somewhat below the interface of the floating liquid and water surface.

3,623,610
REVERSE OSMOSIS APPARATUS
Ole Jentoft Olsen, and Rud Frik Madsen, both of Nakskov, Denmark, assignors to Aktieselskabet De Danske Sukkerfabrikker, Copenhagen, Denmark
Filed Oct. 23, 1969, Ser. No. 868,860
Claims priority, application Denmark, Oct. 25, 1968, 5179/68
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—321 7 Claims



In an apparatus for reversed osmosis comprising a plurality of disc-formed semipermeable membranes arranged in a pile the liquid to be treated is conducted alternatively outwardly and inwardly along the membranes. Between the membranes combined distance rings and guide plates are arranged which respectively separate the membranes and conduct the liquid along the membranes. In each combined distance ring and guide plate holes are provided inside the distance ring for conducting the liquid from one side of the guide plate to the other and at the center of the pile the liquid is transferred from one membrane to the next membrane through gaps between the membranes and a central bolt which clamps the pile together axially.

3,623,611
MICRODIALYZER APPARATUS
William H. Riley, and Richard H. Reitz, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Nov. 10, 1969, Ser. No. 875,020
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 5 Claims

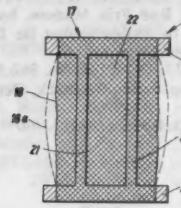


A device for use in performing equilibrium dialysis studies with very small volumes of solution (0.100 ml. or less, for example). The device is of sandwich construction with a permeable membrane being sandwiched between two layers of elastic, fluid-impervious material which contain fluid-receiving pockets and which are disposed under pressure between fluid-impervious rigid platelike outer wall elements.

3,623,612
FILTER
Franz Ernst, Aglasterhausen, Germany, assignor to Chemie und Filter GmbH, Heidelberg, Germany
Filed Feb. 24, 1970, Ser. No. 13,704
Claims priority, application Germany, Mar. 8, 1969, P 19 11 808.2
Int. Cl. B01d *29/14*
U.S. Cl. 210—356 5 Claims

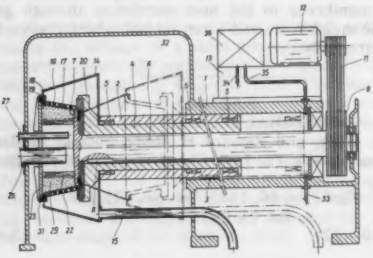
The invention relates to a filter for pipes of the type used for carrying water for industrial uses. The filter has a filter element which comprises a rigid, cylindrically shaped skeleton frame and a sheet material sieve internally of the

frame. The sieve is attached only to the top and bottom portions of the frame and has the property such that it is deformable from a slack state to a tensioned state under the effect of fluid pressure. The sieve has restoring properties



which cause damped vibrations thereof during the transition from the tensioned state to the slack state. A transparent collecting container beneath the filter element has a light filtering color or tint for preventing the growth of algae in the container.

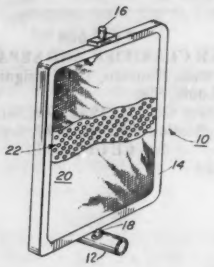
3,623,613
CENTRIFUGE
Johann P. Quetsch, Berghausen, Germany, assignor to Ernst Heinkel Maschinenbau GmbH, Stuttgart, Germany
Filed Mar. 4, 1970, Ser. No. 16,337
Claims priority, application Germany, Mar. 5, 1969, P 19 11 147.8
Int. Cl. B01d *53/00*
U.S. Cl. 210—370 **8 Claims**



Centrifuge for separating liquid and solid components from a suspension, wherein the centrifuge is provided with a centrifugal drum and a filter bag insertable therein. A boundary edge of the filter bag is attached to the discharge end of the centrifugal drum and the other boundary edge is attached to a mushroom-shaped or buffer-type bottom piece; the centrifugal drum and the bottom piece are arranged coaxially with respect to each other and are rotatable together. In addition, the drum and bottom piece are relatively axially movable with respect to each other during rotation. A lid is mounted to the bottom piece and contacts the discharge end of the drum when the bottom piece is located at the bottom of the centrifugal drum during the centrifuging process itself. The lateral walls of the centrifugal drum are tapered conically to a minor extent toward the bottom at an angle which allows removal of the centrifugal drum from the filter bag in a satisfactory and easy manner.

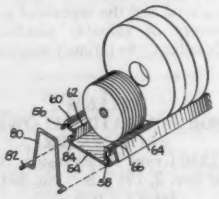
3,623,614
FILTER LEAF CORE
Henry Schmidt, Jr., Hinsdale, Ill., assignor to Industrial Filter & Pump Mfg. Co., Cicero, Ill.
Filed Dec. 11, 1968, Ser. No. 789,642
Int. Cl. B01d *25/04*
U.S. Cl. 210—486 **5 Claims**

A core for a filter leaf for use in a pressure filter tank includes a pair of thin rubber sheets bonded to opposite faces of a fiber glass reinforcing panel. Each outer sheet has a multiplicity of outwardly extending studs in the form of tabular



protrusions which define therebetween a plurality of fluid-distributing troughs.

3,623,615
TAPE REEL STORAGE APPARATUS
Albert A. Kawachi, 150-76 Village Road, Jamaica, N.Y.
Filed Apr. 9, 1969, Ser. No. 814,575
Claims priority, application Japan, July 9, 1968, 43/58691; July 9, 1968, 43/58692
Int. Cl. A47b *81/06*
U.S. Cl. 211—40 **7 Claims**

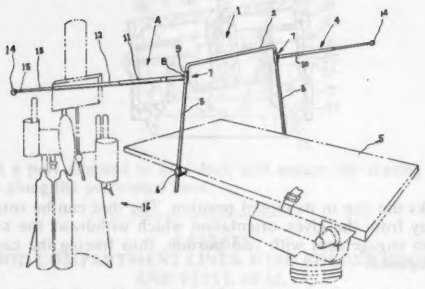


Disc-shaped reels of photographic film or data processing tapes are stored in side-by-side position on a horizontally elongated rack having longitudinally extending parallel supports for storing individual reel cases on their rims in a vertical position. Provided on the rim of the reel case is at least one projection extending outwardly from the rim. A reel case is removed from the rack by rotating the case until the projection contacts a rack support, at which time continued rotation causes the reel case to pivot and roll over the rack support and out of the rack space. In a further embodiment the parallel supports provide a pair of spaced outer ridges and a pair of spaced inner ridges adapted for supporting reels of various diameter sizes.

3,623,616
ANESTHESIA SCREEN
Harvey J. Engelsher, Yonkers, N.Y., assignor to Horizon Industries, Ltd., Bronx, N.Y.
Filed Oct. 7, 1969, Ser. No. 864,354
Int. Cl. A47f *5/00*
U.S. Cl. 211—86 **1 Claim**

An anesthesia screen is formed of an adjustable frame on which a sheet is suspended to separate a patient on an operating table from an anesthesiologist with his equipment. The frame is a crossbar with spaced, downward extending legs in the shape of an inverted U, the lower portion of each

leg being adjustably secured to one side of the operating table. From an upper portion of each leg a telescoping arm is



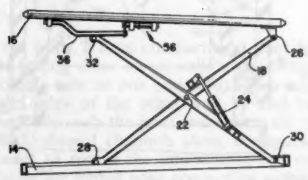
laterally extendible, each arm being adapted to support a sheet.

3,623,617

CARGO-HANDLING DEVICE HAVING A TILT-ADJUSTING SYSTEM

Laszlo Nemessanyi, Glen Head, N.Y., assignor to Tridair Industries, Redondo Beach, Calif.

Filed Apr. 20, 1970, Ser. No. 29,964
Int. Cl. B60p *1/12*
U.S. Cl. 214—1 D 11 Claims



A cargo-handling device having a load-supporting bed that can be elevated from a parallel first position to a second parallel second position and then tilted by a tilt-adjusting system to a nonparallel third position to match an adjacent plane surface for loading or off-loading of cargo. The bed can be returned to the first position and restored to its parallel orientation from the nonparallel third position without further actuation of the tilt-adjusting system.

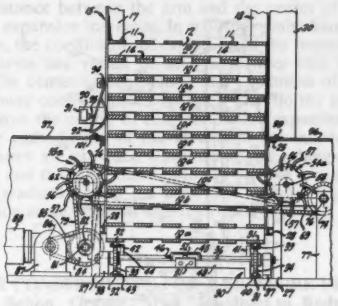
3,623,618

PALLET STORAGE AND DELIVERY MECHANISM

Stanley B. Shaw, Sunol, Calif., assignor to C T Supply Co., Fremont, Calif.

Filed Oct. 20, 1969, Ser. No. 867,776
Int. Cl. B65g *59/06*
U.S. Cl. 214—8.5 K 9 Claims

A downstacker mechanism for storing and delivering pallets one by one to a conveyor for transport thereby to a palletizer machine operative to assemble for packaging empty containers of the type commonly known as cans or tin cans. The mechanism includes a vertically oriented storage magazine in which pallets are retained in stacked juxtaposition one above another. Associated with the storage magazine are a plurality of pallet-support and delivery devices mounted for rotational movement about horizontal axes, and each having a plurality of outwardly extending fingers angularly spaced from each other for selective engagement with pallets comprising such stack thereof so as to control movement of the stack through the magazine. Motor means drivingly connected with the devices synchronously



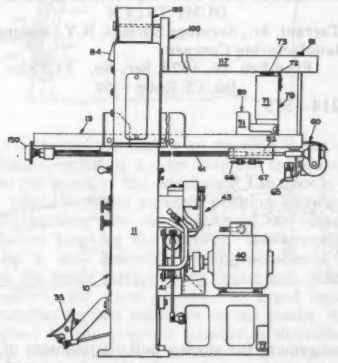
displaces the same step by step so as to cause the same to release in turn each successive lowermost pallet in the stack upon demand from a discharge conveyor onto which such pallets are delivered.

3,623,619

PAPER CUTTER MAGNETIC SPACER

Homer Loper, Muskegon, Mich., assignor to The Challenge Machinery Company, Grand Haven, Mich.

Filed Apr. 27, 1970, Ser. No. 31,927
Int. Cl. B23q *5/00*
U.S. Cl. 214—1.6 11 Claims



A cutter especially adapted for cutting stacks of paper stock employing a powered back gauge. An elongated magnetic memory track extends along the path of movement of the gauge and the gauge carries a transducer capable of sensing or modifying the program thereon, such program determining automatically the stopping points for the back gauge during a cutting operation. Means are provided for physically shifting the memory track to compensate for mechanical and electrical lag or response time of the apparatus.

3,623,620

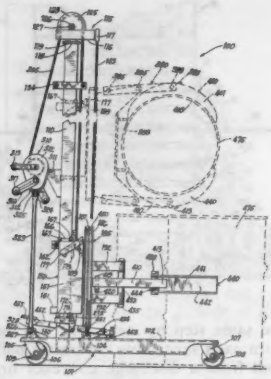
DEVICE FOR ELEVATING AS WELL AS TIPPING OR TILTING DRUMS, BARRELS, CONTAINERS, AND THE LIKE

Howard H. Vermette, No. 7 143rd St., Hammond, Ind.

Filed Nov. 4, 1969, Ser. No. 874,007
Int. Cl. B60p *1/04*
U.S. Cl. 214—313 20 Claims

A device for elevating, as well as for tipping or tilting drums, containers and the like for dumping the contents

therefrom, which device includes an upright or post supported on a base and a carriage member slidable on the upright and operated by means of a winch which raises and lowers the carriage member on the upright. The carriage supports a rotatable pulley which carries article-gripping means

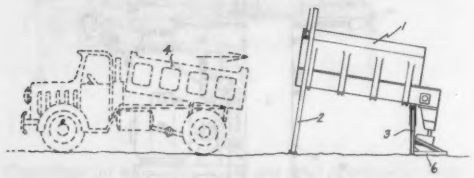


for engaging the drum container or the like, the article-gripping means is hydraulically adjustable so that the drum or article may be tightly gripped during the elevation thereof and also during the tipping or the tilting thereof. The hydraulic gripping means is provided with a safety valve to prevent premature release of the drum or article gripped thereby.

3,623,621
STORAGE SUPPORT FOR EQUIPMENT USED ON A DUMP TRUCK

Fred K. Tarrant, Sr., Saratoga Springs, N.Y., assignor to Tarrant Manufacturing Company

Filed Feb. 16, 1970, Ser. No. 11,392
Int. Cl. B60p *1/64*
U.S. Cl. 214—515 **8 Claims**



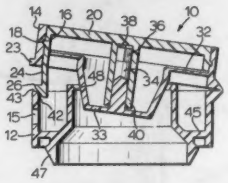
An arrangement for storing bulky equipment of the type installed and used on a dump truck and removed from the truck during nonuse periods consists of a support pivotally connected at the rear of the equipment and adapted to rest on the ground and a pair of front legs having transverse arms which fit in openings at the front of the equipment. The arms are inserted in the openings after the truck has raised the front of the equipment to an elevated position so that when the truck body is subsequently lowered the front legs engage the ground to maintain the equipment elevated above the dump truck and the truck can be moved forwardly leaving the equipment at rest, supported by the pivotal support and front legs.

3,623,622
SAFETY LOCKING CLOSURE

Peter Sullivan, Toronto, Ontario, Canada, assignor to Westhem Corporation Limited, Weston, Ontario, Canada

Filed July 13, 1970, Ser. No. 54,440
Int. Cl. A61j *1/00*; **B65d** *55/02*
U.S. Cl. 215—9 **10 Claims**

A safety locking closure for a container, comprising a base portion and a cap hinged to the base. The base has an aperture giving access to the container, and the cap can swing to close or open the aperture. A pivotally mounted locking disc on the cap is torsion-biased into a given orientation, and when in this orientation a locking tooth carried on an arm secured to the disc engages a portion of the base portion and

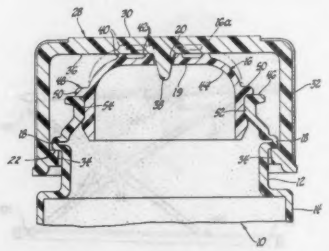


locks the cap in its closed position. The disc can be rotated away from the given orientation which withdraws the tooth from engagement with said portion, thus freeing the cap to be opened.

3,623,623
CHILDPROOF SAFETY PACKAGE

Lothar J. Bauer, Windsor, Ontario, Canada, assignor to Reflex Corporation of Canada Limited, Windsor, Ontario, Canada

Filed Sept. 5, 1969, Ser. No. 855,629
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **16 Claims**



A childproof safety package including a container having a spring member secured thereto with a cap engaging portion surrounding the discharge opening of the container, the cap engaging portion being yieldable along the container axis. A plurality of container locking elements are located a fixed axial distance from the normal unstressed position of the cap engaging portion such that the cap engaging portion is resiliently yieldable toward the container locking elements from its normal position. A safety cap is mounted on the container having a plurality of cap locking elements engageable with a disengageable from the container locking elements by combined axial and rotative motion of the cap relative to the container, and the cap engaging portion of the spring member engages the inner surface of the end wall of the cap when the locking elements are engaged to bias the cap against axial movement from locked engagement with the container.

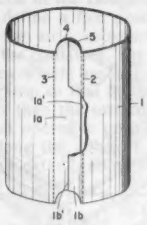
3,623,624
THERMOCONTRACTILE CAPSULE

Masaaki Fujio, 500 Central National Bank Bldg., Des Moines, Iowa

Filed July 2, 1970, Ser. No. 51,849
Int. Cl. B65d *41/02*
U.S. Cl. 215—38 A **4 Claims**

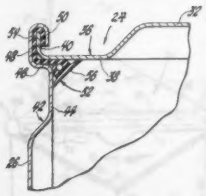
A capsule made of thermocontractile material and having at least a pair of lines of perforations from side to side along

which the capsule may be torn open. The capsule is provided



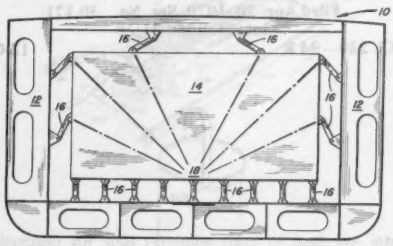
with a part adapted to introduce and ensure the tearing action along the perforated lines.

3,623,625
FOOD COMPARTMENT LINER WITH FOLDED EDGES AND VINYL SEAL
Keith K. Kesling, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 19, 1969, Ser. No. 859,505
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 R 1 Claim



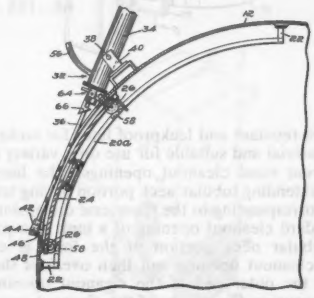
In preferred form, a food compartment liner for domestic refrigerators having sheet metal walls with contiguous edges joined by folding tabs on one edge of the two adjacent walls over a turned edge of the other wall. A seal between the edges hermetically seals the joint and covers the intersection of the walls. U-shaped channels along contiguous edges of the walls coact to recess the intersection or corner of the walls and locate the folded edge connection within the liner's outline as defined by intersecting planes of the walls.

3,623,626
SUPPORTING MEANS FOR INDEPENDENT TANKS
Thomas F. Bridges, Port Washington, N.Y., assignor to John J. McMullen Associates, Inc., New York, N.Y.
Filed July 31, 1969, Ser. No. 846,454
Int. Cl. B65d *25/00*
U.S. Cl. 220—15 12 Claims



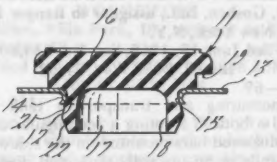
A system for supporting tanks housed in the holds of ships, which tanks serve to transport cargo at relatively high or relatively low temperatures and which tanks, as a consequence, are subject to substantial contractions and expansions. The supporting system comprises a plurality of supporting arms positioned around the tank so that the length of each arm is substantially at a right angle with respect to an imaginary line drawn between the arm and the center of contraction and expansion of the tank. In another embodiment of the invention, the length of each supporting arm increases as the distance between the arm and the center of contraction and expansion increases. In a further embodiment of the invention, the coefficients of expansion of the respective supporting arms are varied in such a manner that the arms nearest the center of contraction and expansion of the tank have a lower coefficient of expansion than do the arms most remote from the center of contraction and expansion. In still a further embodiment of the invention, the individual supporting arms are provided with insulation bushings between the arms and the tank, these bushings serving to regulate the thermal gradient across the arms and thus to regulate the contraction and expansion characteristics of same.

3,623,627
DOOR CONSTRUCTION FOR A PRESSURE VESSEL
Alan S. Bolton, Orange, Mass., assignor to Rodney Hunt Company, Orange, Mass.
Filed Aug. 22, 1969, Ser. No. 852,205
Int. Cl. B65d *43/20*
U.S. Cl. 220—41 8 Claims



Means for closing and sealing an opening in the wall of a pressure vessel, including a door member carried on tracks attached to the inside of the vessel wall. The door is movable along the tracks between an open position allowing access through the opening into the interior of the vessel, and a closed position blocking the opening. The opening is surrounded by a seal assembly which includes a grooved member on the inside surface of the vessel wall. When in the closed position, the door member is urged against the grooved member by cam members on the tracks. A flexible seal contained by the grooved member is thereafter urged into contact with the adjacent surfaces of the closed door to provide a pressuretight seal between the door member and the vessel wall.

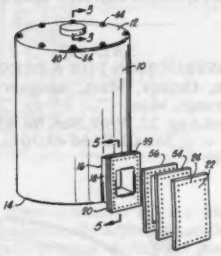
3,623,628
OIL FILLER PLUG
Brian F. Rericha, Westmont, Ill., assignor to Microdot Inc., New York, N.Y.
Filed Feb. 4, 1970, Ser. No. 8,464
Int. Cl. B65d *41/00*
U.S. Cl. 220—42 B 4 Claims



The oil filler cap is molded from an oil-resistant elastomer to have a circular top which is shouldered on the bottom side

to provide a gripping edge for ease of removal. A cylindrical sleeve extends downwardly from the top having a diverging outer surface which provides a downward urge and locking seal with the reversely turned edge at the oil filler opening in an engine rocker arm cover which is sealed thereby.

3,623,629
TANK LINER
John A. Hendershot, 6508 E. 57th Pl., Tulsa, Okla.
Filed Feb. 27, 1969, Ser. No. 803,003
Int. Cl. B65d *25/14*
U.S. Cl. 220—63 R **7 Claims**



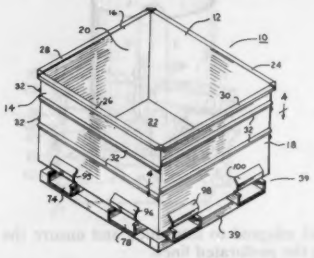
A corrosion-resistant and leakproof liner for tanks formed of flexible material and suitable for use on a variety of tanks having different sized cleanout openings. The liner has a transversely extending tubular neck portion having transverse dimensions corresponding to the transverse dimensions of the smallest standard cleanout opening of a tank of a particular size. The tubular neck portion of the liner is extended through the cleanout opening and then overlaps the flange provided on the outer end of the cleanout opening neck. When the transverse dimensions of the cleanout opening are larger than the transverse dimensions of the tubular neck portion of the liner, a lightweight support is positioned in the cleanout opening and supports the tubular neck portion of the liner to prevent collapse of the tubular neck portion of the liner and maintain a cleanout opening for the tank.

3,623,630
INFILTRATED POWDERED METAL COOKING UTENSIL
John E. Rode, 514 W. Main St., Ligonier, Pa.
Filed Apr. 29, 1969, Ser. No. 820,145
Int. Cl. A47j *27/00*
U.S. Cl. 220—64 **5 Claims**

The invention concerns a powdered metal cooking utensil with the powdered metal member having at least a region through which heat is transferred to the material and with the said region being infiltrated by a metal having a higher coefficient for heat conductivity than the powdered metal.

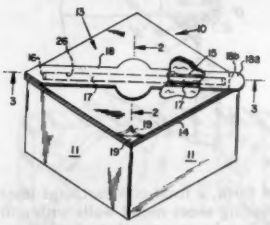
3,623,631
FRUIT MEASURING AND TRANSPORTING TANK
Jene F. Ford, Goshen, Ind., assignor to Bangor Punta Operations, Inc., New York, N.Y.
Filed June 19, 1969, Ser. No. 834,809
Int. Cl. B65d *7/44, 21/02*
U.S. Cl. 220—69 **11 Claims**

A fruit measuring and transporting tank having four sidewalls and a bottom forming a rectangular container and horizontally disposed bars mounted on the sidewalls for holding the sidewalls in an inwardly deflected position to resist the pressure of the container contents against the sidewalls, and a pallet for supporting the container. The pallet consists of a horizontal frame and a pair of pockets disposed between the frame and the bottom of the container on each side for receiving the forks of a forklift truck. An adjustment mechanism mounted in the center of the pallet deflects the



bottom upwardly or downwardly to obtain the desired location for the fruit-measuring instrument.

3,623,632
COMBINATION FOOD CONTAINER AND IMPLEMENT FOR EXTRACTING THE CONTENTS
Henry M. Chang, Bronx, N.Y., assignor to First Dynamics, Inc., New York, N.Y.
Filed Apr. 14, 1969, Ser. No. 815,935
Int. Cl. A47g *19/22*
U.S. Cl. 220—90.2 **3 Claims**



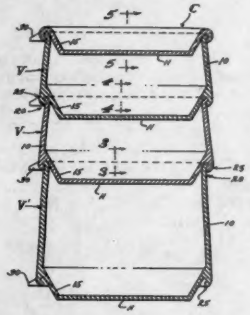
A sealed container for foods in whatever suitable form, having an implement such as, for example, a straw, a spoon, or a fork, carried within a groove positioned entirely within the perimeter of one flat wall of the container. The groove has a depth such that the implement is positioned within the container yet sealed therefrom, and a tearable sealing member covers the groove to seal off the outside air. said one wall is additionally provided with a recess communicating with the groove for insertion of a finger to dislodge the implement.

3,623,633
FLEXIBLE HANDLE FOR CONTAINERS AND METHOD OF PRODUCING CONTAINER HANDLES
Arthur W. Kinn, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.
Filed Apr. 20, 1970, Ser. No. 30,171
Int. Cl. B65d *25/28*
U.S. Cl. 220—94 R **12 Claims**

A handle for a container consisting of an elongated flexible strip having opposite ends secured at spaced locations to the

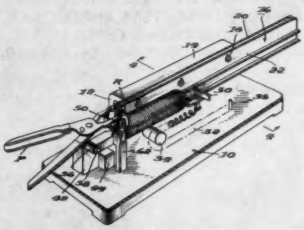
peripheral surface of the container in a manner that the length of the unsecured portion of the strip is greater than the peripheral dimension between the spaced locations. A double fold is produced in the elongated strip, between the spaced locations, to define a first position locating the unsecured portion of the strip substantially flush with the peripheral surface of the container. The adhesive securement terminates along lines which are angularly related to the elongated axis of the strip so that the unsecured upper edge of the strip is shorter than the unsecured lower edge. The strip is movable to an operative position by unfolding and reversing the strip along the adhesive termination lines to produce a handle which extends above the container.

3,623,634
MODULAR CONTAINER
Johanness Norgard, 555 Barry Apt. Hotel, Chicago, Ill.
Filed Nov. 3, 1969, Ser. No. 873,195
Int. Cl. B65d *21/02*
U.S. Cl. 220—97 R **6 Claims**



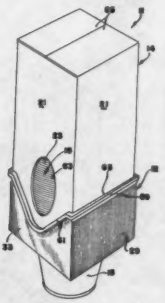
A sectional container for storing and dispensing of a multiplicity of articles, especially articles such as medication pills that are accounted for in numbers, and comprised of like and/or identical vessels that are composed in cooperative coupled relation and preferably with one top closure, to thereby establish a straight cylinder or like compartmented container with normal ends.

3,623,635
PLIERS-OPERATED RETAINING-RING DISPENSERS
Hans Erdmann, Maplewood, N.J., assignor to Waldes Kohinoor, Inc., Long Island City, N.Y.
Filed June 23, 1970, Ser. No. 49,141
Int. Cl. B23q *7/08*
U.S. Cl. 221—23 **19 Claims**



A dispenser for split retaining rings of both the internal and external forms designed to be operated by a conventional pliers-type ring pickoff and applying or assembling tool, comprising a magazine rail (shown to be horizontally disposed but which can also be disposed at any other convention angle) for maintaining a supply of the retaining rings to be dispensed in column formation; a support for said magazine rail; spring feed means for feeding the column of rings longitudinally along and towards one end of the magazine rail; a slide mounted for reciprocatory travel in a path which intersects and is further so related longitudinally with respect to the ring column as to effect movement of each then endmost ring of the column from an in-column position to an offset, relatively raised position in which the apertures conventionally provided in the ring ends are accessible to the plier tips; and a nonyieldable coupling operative between each so-offset ring of the column and said slide for effecting reciprocatory travel of the slide and thereby movement of the next endmost ring of the column to said offset position as aforesaid responsive to said so-offset ring being picked off (dispensed) by said pliers. Also disclosed are various means for adjusting the magazine rail in accordance with the various sizes of the rings to be dispensed, and for supporting the pliers during the ring picking off (dispensing) operation in manner as substantially reduces operator fatigue.

3,623,636
ONE-PIECE CUP DISPENSER
Giacinto C. D'Ercoli, Park Forest, Ill., and Joseph Petricek, Sr., La Mirada, Calif., assignors to Solo Cup Company, Chicago, Ill.
Filed Aug. 21, 1969, Ser. No. 851,824
Int. Cl. B65d *83/00*
U.S. Cl. 221—64 **2 Claims**

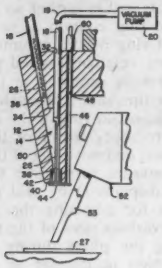


A cup dispenser comprises a one-piece, molded plastic holder having a hollow opening into which is telescoped a lower end of an elongated packing container or package having a stack of nested cups therein. Cams in the opposite sidewalls of the holder project inwardly to deflect flexible sidewalls of the container to define a restricted opening or throat having a dimension less than the diameters of rims for the cups with the result that the cups are held against sliding through and from the container. The lowermost cup may be grasped and pulled past the restricted throat with the cup rim deflecting radially inwardly as the cup is withdrawn. Stripper means in the form of inwardly extending projections may be provided on the holder beneath the cam for directly engaging and deflecting the cup rim prior to release of the lowermost cup from the holder.

3,623,637
VACUUM CHUCK AND METHODS OF TRANSFERRING WORKPIECES
Marion F. Miller, Villa Park, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Dec. 29, 1969, Ser. No. 888,238
Int. Cl. B23q *7/04*
U.S. Cl. 221—211 **15 Claims**

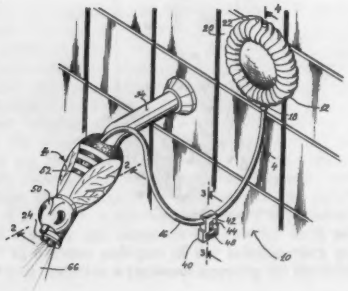
A workpiece is drawn by vacuum through a passage in a housing and into a chamber into which a chuck having a bore through its length and a workpiece engaging end is slidably extended. The end of the workpiece which enters the chamber last is drawn by vacuum into, and held within, the bore at the workpiece engaging end of the chuck. The chuck,

and therefore the workpiece, is then advanced through a gate in a second passage to the outside of the housing to deliver



the workpiece to a workpiece-receiving tool. The chuck is then retracted in preparation for the next operation.

3,623,638
LIQUID DISPENSER FOR SHOWER BATH
Sabine Henning, and Lotte Bachmann, both of 33-18 69th St., Jackson Heights, N.Y.
Filed Nov. 10, 1969, Ser. No. 875,051
Int. Cl. B67d *3/00*
U.S. Cl. 222—78 **3 Claims**



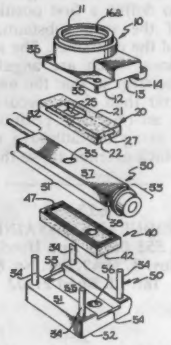
An assembly for discharging liquid into a water shower spray includes a flat, circular container mountable removably on a bathroom wall, a flexible tube connected to the container, a manually operable valve on the tube, and an elongated flexible shell which clamps on a shower fixture. The tube extends through the shell and is secured therein. The tube has a liquid discharging end supported by shell just above the shower spray.

ERRATUM

For Class 223—114 see:
Patent No. 3,623,640

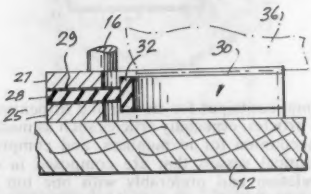
3,623,639
POWDER-DISPENSING DEVICE
Robert C. McShirley, 917 Verdugo Circle Drive, Glendale, Calif.
Filed July 21, 1970, Ser. No. 56,770
Int. Cl. B67d *1/16*
U.S. Cl. 222—108 **10 Claims**

Device for dispensing a measured volume of powder, having a cap member superimposed on a base member and defining at their mating surfaces a horizontally extending channel in which a metering member slides, the metering member containing a vertically extending passageway therethrough of the measured volume. The top and bottom of the channel are lined with resilient members such as plastic inserts each having a low-friction surface bearing against the metering member and defining a continuous



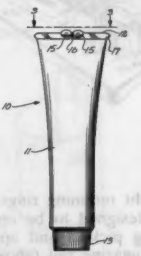
peripheral trough to prevent escape of powder from the channel. The device is particularly adaptable for dispensing spherical alloys with partical sizes of a few microns.

3,623,640
DEVICE FOR REMOVING SHOES
Edward Zalejski, 84-19 Penelope Ave., Middle Village, N.Y.
Filed Jan. 14, 1970, Ser. No. 2,841
Int. Cl. A47j *51/02*
U.S. Cl. 223—114 **1 Claim**



A device for removing shoes from a person's feet includes a baseboard having a pair of spaced blocks in which are U-shaped cutouts. Flexible T-shaped rubber strips are secured in the blocks for engaging heels of a person's shoes when they are inserted into the cutouts in the blocks. Instead of T-shaped strips, the heel grippers may have cooperating movable arms carried by elastic blocks on the baseboard.

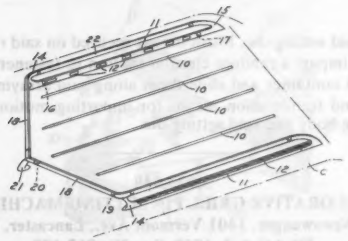
3,623,641
CONTAINER WITH SUCTION-CUP HANGER
Douglas R. Hansen, P.O. Box 1041, and Donald L. Cook, P.O. Box 382, both of Santa Monica, Calif.
Filed July 30, 1969, Ser. No. 846,020
Int. Cl. B65d *35/56*
U.S. Cl. 222—105 **7 Claims**



A squeeze-tube container having a tubular body with a suction cup secured thereto for suspending the container

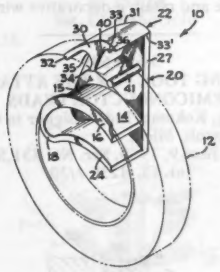
from a surface such as a shower-bath wall. Preferably, a pair of suction cups are flexibly but permanently attached to a sealing lip at one end of the tube. The inverted container is thereby easily attached to a wall surface, and can be hinged away from the wall when a closure cap is removed to dispense a product such as shampoo in the tube.

3,623,642
MODULAR LUGGAGE RACK
James Stephen, Royal Oak, Mich., assignor to James Stephen, Royal Oak, Mich. and Helm Design & Manufacturing, Inc., Detroit, Mich.
Filed Apr. 30, 1969, Ser. No. 820,527
Int. Cl. B60r *9/04*
U.S. Cl. 224—42.1 E **24 Claims**



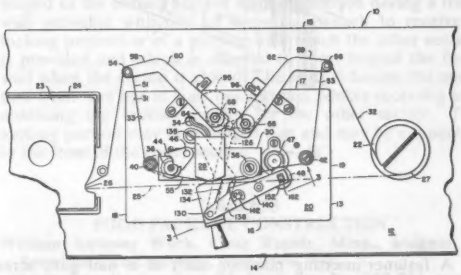
A modular luggage rack comprising a bed having a plurality of spaced longitudinally extending strips fixed to the car top and side rails fixed to the car top. Each of the side rails has longitudinally spaced elongated openings. Stanchions can be provided at the ends of the side rails and in turn support upper side rails and crossrails. Alternatively end plugs can be provided on the ends of the side rails. Ski racks can be mounted in the openings of the side rails. A luggage bag can also be attached to the rack through the openings in the side rails.

3,623,643
TAPE DISPENSER
Akira Ikeda, Los Altos Hills, Calif., assignor to Sam I. Ishigo, San Jose, Calif.
Continuation-in-part of application Ser. No. 802,382, Feb. 26, 1969. This application May 21, 1969, Ser. No. 826,500
Int. Cl. B26f *3/02*
U.S. Cl. 225—65 **8 Claims**



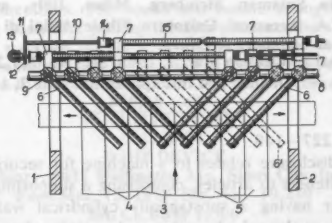
A tape dispenser for use with a roll of tape having a curved interior surface, and an exterior surface concentric to such interior surface. The dispenser comprises an arcuate, resilient bearing member arranged to engage the interior surface of the roll of tape, a tape-cutting assembly arranged to engage the exterior of the roll of tape, and a mounting structure for retaining the bearing member and the tape-cutting assembly in positions for engaging the interior and exterior surfaces, respectively, of the roll of tape.
The application of force on the mounting structure below the bearing member to urge it toward the bearing member flexes the mounting structure at its junction with the bearing member and raises the cutting assembly away from the bearing member for mounting the tape dispenser on the roll of tape or for removing the tape dispenser from the roll of tape. The cutting assembly includes a guide disposed transversely to the exposed surface of the roll of tape to prevent the free end of the roll of tape, after the severance of the end of the roll of tape, from falling back onto the roll of tape. Thus, a free end for convenient gripping is assured. In addition, the cutting edge of the cutting assembly projects upwardly and outwardly, and below the cutting edge is an oppositely directed projection with a curved surface therebetween, for providing an exposed, unobstructed free end portion for the roll of tape for easy grasping and gripping. An indentation on the curved surface between the cutting edge and the lower oppositely directed projection further facilitates the grasping of the free end of the roll of tape.

3,623,644
WEB-HANDLING APPARATUS
Alf J. Olsen, Elk Grove, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Feb. 26, 1970, Ser. No. 14,480
Int. Cl. G03b *1/56*
U.S. Cl. 226—89 **20 Claims**



A pair of guide members disposed on opposite sides of a transducer head hold a record tape in a tortuous course between a takeup reel and a supply reel. A pair of arms are rockably arranged for straightening the path by moving said guide members simultaneously and are controlled by springs and by a cam which is manually responsive. A link couples the cam and said arms and carries a follower which is engaged in a cam track in said cam.
A pinch roller is responsive to said cam through the agency of a linkage to said follower and moves between a tape disengaged position and a position in which the tape is held in capstan contact as the guide members move between straight and tortuous course conditions.

3,623,645
UNIT FOR ROTARY-PRESS REVERSING BARS
Karl A. Klingler, Frankenthal, Pfalz, Germany, assignor to Schnellpressenfabrik Frankenthal Albert & Cie, Frankenthal/Pfalz, Germany
Filed July 15, 1969, Ser. No. 841,929
Claims priority, application Germany, July 19, 1968, P 17 61 899.4
Int. Cl. B65h *23/32*
U.S. Cl. 226—197 **1 Claim**



In a printing press, the reversing bars are each secured at one end to a retaining unit in a manner which permits the

selective shifting of the orientation of the bars through an angle of 90°.

3,623,646

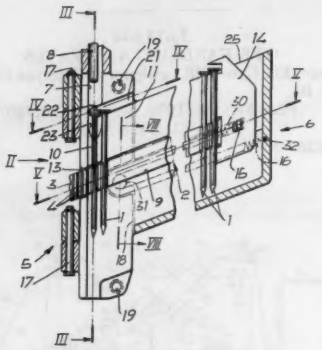
FASTENER-INSERTING MACHINE

Adolf Cast, Oberlenningen, and Kurt Reich, Nurtingen, both of Germany, assignors to Karl M. Reich Maschinenfabrik, Nurtingen, Germany

Continuation-in-part of application Ser. No. 718,676, Apr. 4, 1968, now abandoned. This application Dec. 15, 1969, Ser. No. 884,985

Int. Cl. B25c *1/00*

U.S. Cl. 227—136 17 Claims



A fastener-inserting machine such as a nail gun, screw driving gun, or the like with a driving channel for the drive rod and a feed channel for a fastener strip carrying a row of fasteners on one lateral side of a carrier strip. The feed channel extends to and through the driving channel and has a lateral wall recessed from the wall of the driving channel so that during the strokes of the drive rod in the driving channel or its rotation therein when serving as a screw driver, the drive rod will not engage with the carrier strip. For severing headed fasteners such as nails or screws one at a time from the carrier strip and shifting at least the fastener head laterally into the driving channel, a groove in the wall of the driving channel in which the head is at first located has an inclined guide surface, whereby when in a nail gun the fastener is moved forwardly directly by the drive rod or—either in a nail gun or in a screw driving gun—the fastener is so moved by a separate shifting member which is driven by the drive rod only during a fist part of its forward stroke and before the drive rod itself engages with the fastener, the fastener head is laterally deflected by the inclined guide surface into the driving channel.

3,623,647

MACHINE FOR SECURING ARTICULATED FASTENERS TO ARTICLES

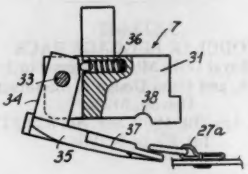
Adalberto Sussman Steinberg, Milan, Italy, assignor to A.C.F.A. Accessori Calzature Fibbie Affini di Adalberto Sussman Steinberg & C.S.r.l.

Original application Mar. 7, 1968, Ser. No. 711,253, now abandoned. Divided and this application June 2, 1970, Ser. No. 54,038

Int. Cl. B21j *15/34*

U.S. Cl. 227—149 1 Claim

This disclosure relates to a machine for securing articulated fasteners to articles, comprising a supporting frame, a container having a substantially cylindrical wall on said frame, a revolving body within said container having an axis of rotation coaxial with said cylindrical wall, a substantially cylindrical skirt member within said container spaced from said cylindrical wall thereof to define a narrow gap therebetween, said skirt member having a top edge defining a helically extending arraying guide, a setting-die, a conveying guide having one end confluently arranged with respect to an end portion of said arraying guide and another end thereof



facing said setting-die, brush means secured on said revolving body to impart a random circular motion to fasteners loaded into said container and slide them along said arraying guide, motor and transmission means for imparting motion to said revolving body and said setting-die.

3,623,648

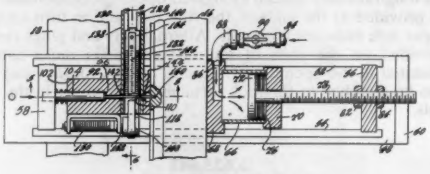
DECORATIVE GRILL PIN SETTING MACHINE

Paul S. Newswanger, 1401 Vermont Ave., Lancaster, Pa.

Filed Oct. 2, 1969, Ser. No. 863,177

Int. Cl. B25c *7/00*

U.S. Cl. 227—153 7 Claims



An automatic pin-setting machine including a plurality of air cylinder operated plungers, a track for individually feeding grill bar retaining pins to the plungers and means reciprocally affixed to the air cylinders to individually drive the pins into the periphery of a wooden sash member in spaced relationship to receive and retain a decorative window grill.

3,623,649

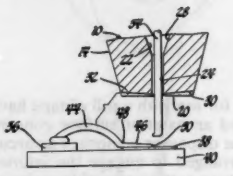
WEDGE BONDING TOOL FOR THE ATTACHMENT OF SEMICONDUCTOR LEADS

Wayne H. Keisling, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 9, 1969, Ser. No. 831,511

Int. Cl. B23k *1/20*

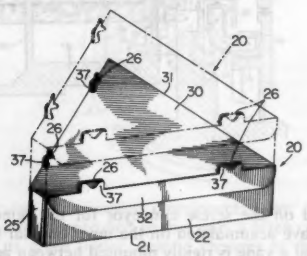
U.S. Cl. 228—15 5 Claims



A bonding tool and method is disclosed for bonding the ends of a threadlike wire lead to two spaced-apart regions of a semiconductive device or other electronic article. One form of this invention includes a bonding tool having a tip for use with a reel of lead wire. The tip has an outwardly extend-

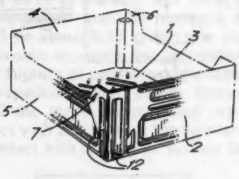
ing tapered groove on its working surface for producing an elongated wedge-shaped bond with the thinnest section of the wedge at the end of the bond adjacent to the reel. The unbonded wire adjacent the thinnest wedge section, extending from the source reel, is readily detached from the bonded portion with a light tug.

3,623,650
CARTON AND BLANK FOR MAKING SAME
Richard M. Watts, Henrico County, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Oct. 31, 1969, Ser. No. 873,021
Int. Cl. B65d 5/24
U.S. Cl. 229—31 R 22 Claims



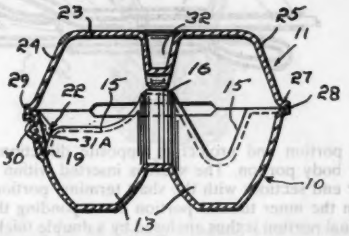
A carton having a bottom wall, a plurality of vertical sidewalls, and a top wall foldably connected to one of the sidewalls. The top wall has extension flaps foldably connected thereto which are held against the exterior top portions of associated sidewalls by a plurality of tabs extending from the top edges of the sidewalls and cooperating fastening tongues defined by nonrectilinear cuts in the top wall. The exteriorly arranged extension flaps prevent outward bulging of their associated sidewalls and the tabs and fastening tongues also cooperate to enable easy vertical stacking of a plurality of cartons by restraining an adjoining carton against lateral movement.

3,623,651
TRAYS FOR THE STORAGE OF ARTICLES
Betty Muriel Marcan, Burrough's Grove, Pump Lane, Little Marlow, Burkinghamshire, England
Filed Sept. 29, 1969, Ser. No. 861,559
Claims priority, application Great Britain, Sept. 30, 1968, 46,254/68
Int. Cl. B65d 5/30
U.S. Cl. 229—35 14 Claims



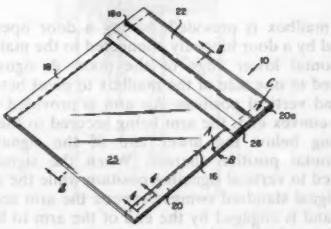
A tray for the storage of articles, such tray having collapsible sidewalls, that is to say they are capable of being folded or hinged with respect to the base of the tray until they are flat therewith, said sidewalls being formed firstly with means for interengaging them, in the erection of the tray, in the vicinity of the corners thereof, and secondly with means adapted to form supports at or adjacent the corners of the tray for receiving and supporting the bottom of another tray placed on top.

3,623,652
MOLDED CARTONS
Harold A. Doughty, Cape Elizabeth, Maine, assignor to United Industrial Syndicate, Inc., Portland, Maine
Continuation-in-part of application Ser. No. 794,117, Jan. 27, 1969, now abandoned. This application Oct. 9, 1969, Ser. No. 868,279
Int. Cl. B65d 85/32
U.S. Cl. 229—44 R 16 Claims



A molded construction is disclosed that has a cover section hinged to the bottom section with one section having a front wall provided with one or more holes each to receive a locking projection of a portion with which the other section is provided and which is adapted to enter behind the front wall when the carton is closed. The section having the aperture front wall has at least one internal pocket receiving and confining the locking portion of the other section. The locking portion may be a hinged flap and may be connected to the front of the cover section.

3,623,653
FOOD PACKAGE CONSTRUCTION
William Anthony Work, Coon Rapids, Minn., assignor to American Can Company, New York, N.Y.
Original application Sept. 25, 1968, Ser. No. 762,501, now Patent No. 3,536,501, dated Oct. 27, 1970. Divided and this application Sept. 4, 1970, Ser. No. 69,543
Int. Cl. B65b 25/06
U.S. Cl. 229—87 F 3 Claims

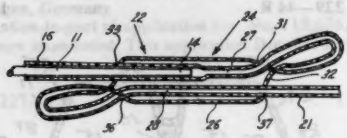


A construction for a food package consisting of two laminate members. Each laminate member consists of an inner layer, disposed adjacent to the food product, and an outer layer bonded to the inner layer. The inner layers are heat sealed together to enclose the food product in the laminate members. The bonds and tensile strengths of the layers are such that pulling the laminate members apart to open the package results in a delamination of one of the laminate members and the tearing of its inner layer to provide access to the food product.

3,623,654
WHIP DEVICE
Gary G. Henry, 4417 Wellington Ave., Sioux City, Iowa
Filed Mar. 13, 1970, Ser. No. 19,210
Int. Cl. B68b 11/00
U.S. Cl. 231—2 R 3 Claims

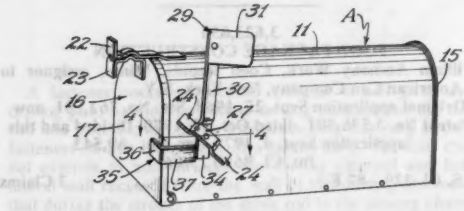
The whip includes a shaft of a fiber glass construction having a handle section and an outer end section including a ter-

minal portion. A tubular braided polyethylene cover includes a pair of end sections and an intermediate section integrally formed with a knot unit. The knot unit includes an outer tubular body portion and a pair of inner tubular portions connected to corresponding ends of the outer body portion and constituting extensions of the cover end sections. The pair of inner portions are in a side-by-side relation within the outer



body portion and project in opposite directions from the outer body portion. The shaft is inserted within one of the cover end sections with the shaft terminal portion projected within the inner tubular portion corresponding thereto. The terminal portion is thus enclosed by a double thickness of the braided cover to prevent the free end thereof from protruding outwardly through the cover.

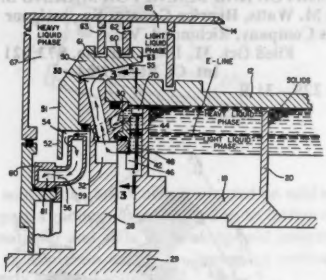
3,623,655
MAILBOX
Peter P. Tieszen, Reedley, Calif., assignor to Samuel Tieszen and Waldo H. Pust, Savage, Mont., part interest to each
Filed Apr. 16, 1970, Ser. No. 29,173
Int. Cl. A47g *29/12*
U.S. Cl. 232—35 **7 Claims**



A mailbox is provided, having a door opening normally closed by a door hingedly connected to the mailbox along the horizontal lower edge of the door. A signal standard is pivoted to one side of the mailbox to pivot between horizontal and vertical position. An arm is provided having a concavo-convex end, the arm being secured to the door and extending below the lower end of the signal standard in horizontal position thereof. When the signal standard is pivoted to vertical signaling position while the door is closed, the signal standard swings between the arm and the mailbox wall and is engaged by the end of the arm to hold the signal arm in vertical position.

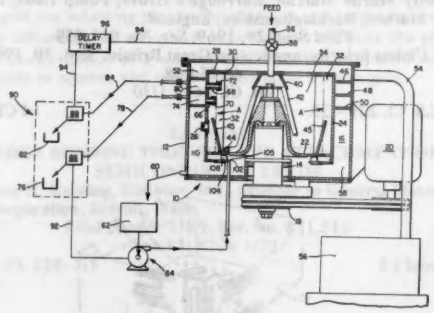
3,623,656
THREE-PHASE CENTRIFUGE
Andre C. Lavanchy, Devon, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed Jan. 30, 1970, Ser. No. 7,285
Int. Cl. B04b *1/00, 7/00, 11/00*
U.S. Cl. 233—7 **13 Claims**

Solids and two liquids, each having different specific gravities, are separated in a centrifuge having a helical screw conveyor mounted within an elongated bowl tapered at one end. A group of solids discharge openings is disposed at the tapered end, and two groups of concentrically arranged liquid discharge openings, one for each separated liquid, are disposed at the other end of the bowl. One group of liquid discharge openings has an annular ring dam mounted adjacent thereto to serve as a weir; the second group of liquid discharge openings has an annular channel disposed adjacent thereto for receiving the separated liquid discharged therethrough, and a skimmer passage disposed within the channel for receiving the liquid within the channel. Optionally, the centrifuge contains a plurality of radially extending ribs mounted adjacent to the two groups of liquid discharge openings for controlling the rotational speed of the separated liquids with respect to the bowl immediately prior to discharge of the liquids. Also, a scraper member is



mounted on the screw conveyor for the removal of solids which have accumulated on the inner annular surface of the bowl, and a vane is rigidly mounted between adjacent flights of the conveyor to exclude the lighter of the two separated liquids from the space adjacent to the solids discharge openings.

3,623,657
CENTRIFUGE APPARATUS
Charles Edward Trump, Bedford, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.
Continuation-in-part of application Ser. No. 743,075, July 8, 1968, now Patent No. 3,560,125. This application Aug. 6, 1970, Ser. No. 62,241
Int. Cl. B04b *11/00*
U.S. Cl. 233—19 A **12 Claims**



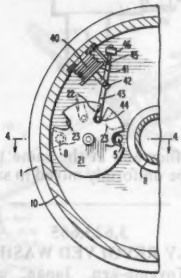
A heavy-phase material and a light-phase material separate into two concentric layers, the heavy-phase material accumulating adjacent to the peripheral wall of the bowl. A control device regulates the position of the interface or line of separation between the layers, the control device including a conduit extending inwardly from an opening in the bowl wall to the desired position, and a detecting device. The conduit conducts a sample of the material to the detecting device for sensing a change in specific gravity at that position. Depending upon the direction of change, the detecting device either temporarily closes a feed valve controlling the introduction of feed mixture into the bowl, or actuates a recycle pump for recycling extracted heavy-phase material back into the bowl.

3,623,658

APPARATUS FOR CONTROLLING THE DISCHARGE OF SEPARATED MATERIAL IN CENTRIFUGAL DRUMS OF CENTRIFUGAL SEPARATORS

Rudolf F. Garbaty, Hans-Salb-Str. 81, 2000 Hamburg/Glashutte, Germany

Filed May 16, 1969, Ser. No. 825,342
Claims priority, application Germany, May 17, 1968, P 17 57 532.5
Int. Cl. B04b *11/00, 15/00*
U.S. Cl. 233—20 R 10 Claims



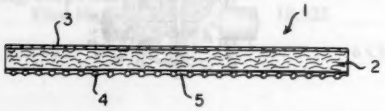
The discharge of separated components from centrifugal drum separators is controlled so that only a given component issues from its given outlet, despite changes in the proportions of the separated components. The centrifugal pressure in the drum is detected, to determine the position of the interface and to make appropriate outlet adjustments, or else a float that moves with the interface makes the needed outlet adjustments.

3,623,659

ARTICLES OF MANUFACTURE CONTAINING ENCAPSULATED, VAPORIZABLE CORE MATERIAL

Theodore Maierson, Dayton, and George E. McGowan, Xenia, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Dec. 29, 1969, Ser. No. 888,609
Int. Cl. A61l *9/04*
U.S. Cl. 239—56 10 Claims



This disclosure is directed to articles of manufacture, e.g., table cloths, shelf paper, etc., which are disposable paper or other fibrous articles containing as encapsulated core material any liquid or solid whose vapor state is functional in respect of a task to be performed, and on at least one major surface thereof a plastic material having a density ranging from about 0.85 to about 0.95 grams per cubic centimeter and being permeable to vapor but impermeable to liquids. Thus, e.g., upon rupture of capsules containing a liquid insect repellent, the repellent vapor passes through the plastic upper layer, yet the more concentrated repellent liquid is kept from contact with any food or the substances which may be present in contact with the plastic surface layer.

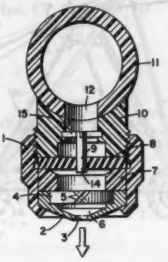
3,623,660

DRIPPROOF VALVE FOR PREVENTING THE LEAKAGE OF LIQUID PRODUCTS

Angelo Manlio Vavassori, and Enrico Pozzi, both of Milan, Italy, assignors to ELICOPTER Societa Trasporti Aerei S.p.A., Milan, Italy

Filed Dec. 12, 1969, Ser. No. 884,567
Claims priority, application Italy, Mar. 27, 1969, 14692A/69
Int. Cl. B05b *15/02*
U.S. Cl. 239—114 1 Claim

Dripproof valve for preventing the leakage of liquids, consisting of a diaphragm or membrane provided with at least one opening or hole having an elastically deformable lip or border, slidingly coupled with a pin passing through said opening or hole. The membrane is made of an elastic material such as rubber, an elastomeric synthetic material or the like. The lipped opening consists of a circular hole disposed



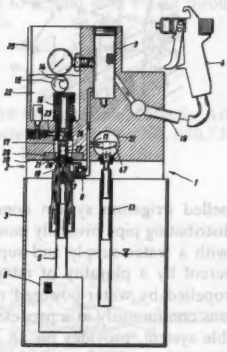
in the middle of the membrane. Coupled with the membrane is a disc of rigid material, provided with an opening corresponding to the opening in the membrane. The valve is applied to a nozzle for the spraying of liquids, being particularly suited for soil or crop spraying.

3,623,661

FEED ARRANGEMENT FOR SPRAY PAINTING

Josef Wagner, 7991 Friedrichshafen-Fischbach, Germany

Filed Feb. 26, 1970, Ser. No. 014,359
Claims priority, application Germany, Feb. 28, 1969, P 19 10 093.7
Int. Cl. B05b *9/00*
U.S. Cl. 239—127 6 Claims



A unitary spray device having a paint-containing reservoir, a diaphragm pump and a feed line communicating from said pump to a spray gun. An air vent relief valve is positioned in the unitary device intermediate the pump and the spray gun. The air vent valve has a conduit terminating proximate the paint intake means of the reservoir.

3,623,662

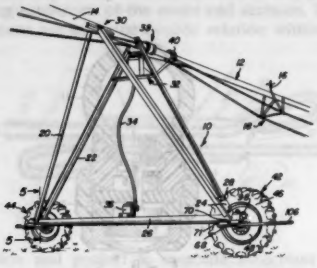
CIRCULAR IRRIGATION SYSTEM WITH WORM GEAR DRIVE

Richard F. Reinke, P.O. Box 272, Deshler, Nebr.

Filed Dec. 11, 1969, Ser. No. 884,117
Int. Cl. B05b *3/12*
U.S. Cl. 239—177 7 Claims

A worm gear drive assembly for driving the wheeled support assemblies for an elongated irrigation pipe including a motor having an output controlled in response to bending or deflection of the pipe and a forwardly and rearwardly extending shaft with a drive worm gear on each end thereof en-

gaged with a worm wheel for driving the supporting wheels. Each supporting wheel is connected to the frame structure in such a manner that it may be oriented for driving the pipe in a direction transverse to the longitudinal axis thereof or in a



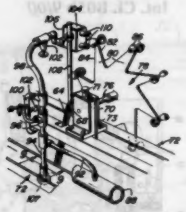
position perpendicular thereto to enable the irrigation pipe to be towed or pulled in a direction parallel to its longitudinal axis to facilitate movement from one area to be irrigated to another.

3,623,663

IRRIGATION SYSTEM

Walter J. Koinzan, Elgin, Nebr.

Filed Mar. 3, 1970, Ser. No. 15,982
Int. Cl. B05b *3/04*
U.S. Cl. 239—177 **23 Claims**



A self-propelled irrigation system consisting of an elongated water-distributing pipe pivotally mounted at one end in engagement with a water supply and supported throughout the length thereof by a plurality of mobile support towers selectively propelled by water-powered motors. The outermost tower runs continuously at a predetermined speed and, through a cable system, provides for an intermittent movement of the towers inwardly thereof, the movement of each tower controlling the movement of the tower controlling the movement of the tower immediately inward thereof through a selective opening and closing of water valves. The apparatus can be reversed, and incorporates an automatic cutoff system should excessive misalignment occur.

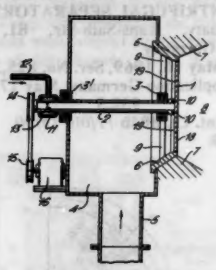
3,623,664

ROTARY-TYPE OIL BURNER

Shoichi Tsuji, Tokyo, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 30, 1970, Ser. No. 6,996
Claims priority, application Japan, Feb. 5, 1969, 44/8569
Int. Cl. B05b *3/02*
U.S. Cl. 239—214.11 **6 Claims**

An oil burner wherein a liquid fuel film is formed on a rotary plate having a plurality of toothed profiles along the circumference thereof, and air is made to pass along the rotary passage which is encircled by the toothed profiles of said rotary plate and a burner ring (or a burner tile) installed at a position close to the outer side of said rotary plate, so that liquid fuel may be made into fine particles by means of said air coming into contact with the liquid fuel film at the edge



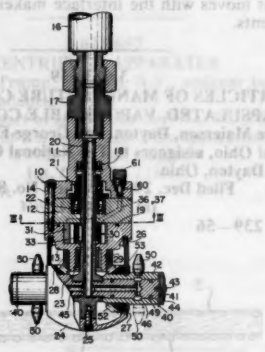
of the toothed profiles and at the same time groups of fine fuel particles may be uniformly mixed in said air.

3,623,665

AUTOMATICALLY REVOLVED WASHING APPARATUS

Takara Sugino, Toyama-ken, Japan, assignor to Sugino Cleaner Wks., Ltd., Toyama-ken, Japan

Filed Jan. 16, 1970, Ser. No. 3,310
Claims priority, application Japan, Feb. 10, 1969, 44/9856
Int. Cl. B05b *3/00*
U.S. Cl. 239—227 **3 Claims**



A washing apparatus is provided which comprises means for adjusting the revolving speed of nozzles about an axis of a head body. The revolution of the nozzles, which are revolved by the reaction forces of the jet flow of flushing water through the nozzles, operates a gear pump provided in the head body. The pressure load upon the gear pump is adjusted from the outside of the head body so that the revolving speed of the nozzles about the axis of the head body can be adjusted apart from the speed of the jet flow of the washing water through the nozzles.

3,623,666

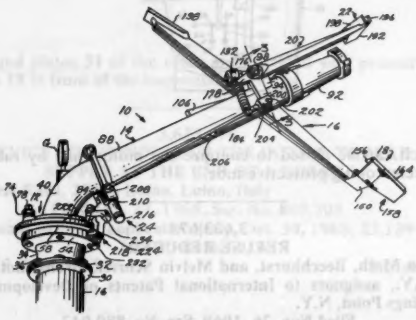
SPRINKLER HEAD

Larry P. Meyer, E. Peoria, Ill., assignor to L. R. Nelson Mfg. Co., Inc., Peoria, Ill.

Filed July 30, 1970, Ser. No. 59,391
Int. Cl. B05b *3/08*
U.S. Cl. 239—230 **6 Claims**

A high capacity agricultural irrigation sprinkler head of the type which is rotated in step-by-step fashion by an oscillating impulse arm having a reactant element providing a stream engaging reactant surface area for effecting both the oscillating movement of the impulse arm and the incremental rotational movements of the sprinkler body, the reactant element is mounted on the impulse arm for resiliently biased pivotal movement to automatically compensate for changes in water

pressure and nozzle outlet size through a wide range to produce a generally constant oscillatory arm speed and a generally constant intermittent rotational speed by varying the angle of deflection or angle of divergence of the stream in response to variation in the energy of the stream engaged thereby. The sprinkler head also includes a reversing arm having a reactant element which is moved into and out of the stream by an over-riding cam mechanism, the reactant element being normally biased out of the stream and retained in



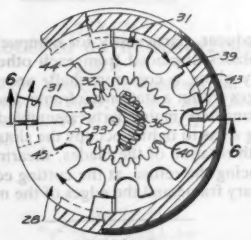
the stream when initially moved therein by the cam mechanism solely by the action of the stream thereon against its normal bias, the reactant element of the reversing arm including a portion providing a reactant surface area for effecting the reversing movement which is similarly mounted on the reversing arm for resiliently biased pivotal movement to likewise automatically compensate for changes in water pressure and nozzle outlet size to produce a generally constant reversing speed by varying the angle of deflection of the stream in response to variation in the energy of the stream.

3,623,667

MOTOR FOR ROTARY SPRINKLERS

Robert B. Costa, Covina, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.

Filed Mar. 11, 1970, Ser. No. 18,525
Int. Cl. B05b 3/04
U.S. Cl. 239—237 **6 Claims**



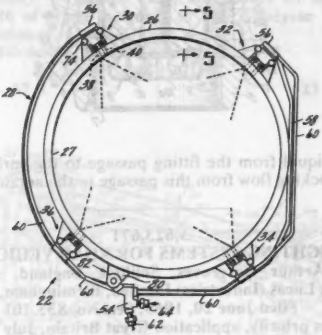
A motor for rotary sprinklers in which a fixed member and a rotatable member are disposed coaxially and are surrounded by a drive ring; the external surfaces of the fixed and rotatable members and the internal surface of the drive ring having two sets of intermeshing teeth which differ in ratio so that, for each rotation of the drive ring, the rotatable member turns in the same or opposite direction with respect to the drive ring a predetermined small amount. The intermeshing members are contained in a chamber having inlets positioned to direct water circumferentially against the drive ring to cause rotation and an outlet through the rotatable member terminating in a sprinkler nozzle.

3,623,668

WASH MANIFOLD

Wilbert B. Freid, Swampscott, and David J. Tapparo, Danvers, both of Mass., assignors to General Electric Company

Continuation of application Ser. No. 710,171, Mar. 4, 1968, now abandoned. This application Feb. 19, 1970, Ser. No. 12,903
Int. Cl. B64c 15/10
U.S. Cl. 239—265.17 **8 Claims**



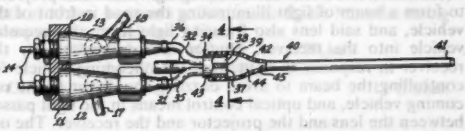
A manifold spray assembly having an annular housing adapted to be removably secured to the inlet end of a gas turbine and support a plurality of nozzle assemblies adapted to spray a fluid into the intake airstream of a gas turbine compressor for cleaning, preservation, or thrust augmentation purposes. The nozzles are recessed within the annular housing so as not to interfere with the gas turbine intake airflow and are connected to a fluid inlet fitting through connector blocks and conduits.

3,623,669

SPRAY GUN

Billy L. Woods, 3818 West Ocotillo, Phoenix, Ariz.

Filed July 10, 1969, Ser. No. 840,713
Int. Cl. B05b 7/04
U.S. Cl. 239—307 **1 Claim**



A dual-spray gun having a pair of discharge nozzle supply openings discharging in a flexible disposable nozzle having a mixing chamber so as to prevent gun clogging and time wasted in cleaning the gun after each spraying operation.

3,623,670

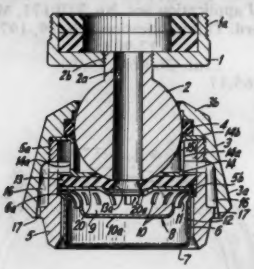
AERATOR AND SPRAY DEVICE

Alfred W. Wakeman, Durham, and Walter C. Beard, Middlebury, both of Conn., assignors to The Waterbury Pressed Metal Company, Waterbury, Conn.

Filed June 17, 1970, Ser. No. 46,844
Int. Cl. E03c 1/084
U.S. Cl. 239—428.5 **8 Claims**

A fitting forms a passage for flow of liquid from a supply duct through a rounded body of the fitting, and a liquid aerator is carried by a support which swivels on the rounded body from a first position to a second position, the support defining spray channels for the liquid. The support also carries means operable in said first position to direct flow of liquid from the fitting passage to the aerator inlet while blocking

flow from this passage to the spray channels, such means being operable in the second position of the support to direct



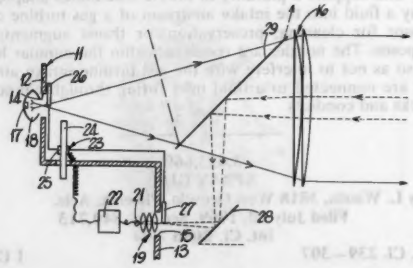
flow of liquid from the fitting passage to the spray channels while blocking flow from this passage to the aerator inlet.

3,623,671

LIGHTING SYSTEMS FOR ROAD VEHICLES

Robert Arthur Hargroves, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 20, 1969, Ser. No. 835,101
Claims priority, application Great Britain, July 5, 1968, 32,140/68
Int. Cl. F21v *11/18*
U.S. Cl. 240—7.1 R **4 Claims**



A lighting system for a road vehicle including a projector and a receiver. A lens for directing light from the projector to form a beam of light illuminating the road in front of the vehicle, and said lens also focusing light form an oncoming vehicle into the receiver. Shutter means operable by the receiver in response to light from the oncoming vehicle for controlling the beam to avoid dazzling the driver of the oncoming vehicle, and optical control means in the light passed between the lens and the projector and the receiver. The optical control means reflects light incident upon it in one direction and transmits light incident upon it in the other direction and so controls passage of light from the projector to the lens, and the passage of light from the lens to the receiver.

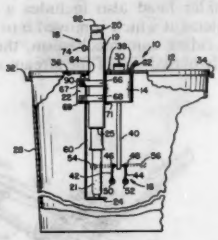
3,623,672

DISPOSING APPARATUS FOR BURNED-OUT OR DEFECTIVE FLUORESCENT TUBES

William De Frank, 165 Fern Castle Drive, Rochester, N.Y.

Filed June 3, 1969, Ser. No. 829,974
Int. Cl. B02c *19/12, 4/32, 11/08*
U.S. Cl. 241—36 **10 Claims**

The entire disposing unit is mounted on the lid of a standard 20-gallon can. The apparatus includes an inlet chute having a passageway for receiving a fluorescent tube, an electric motor connected to a rotatable tube-breaking chain, and a stop positioned a predetermined distance below the outlet opening of the inlet chute. The inlet chute includes an upwardly telescoping protective tube for enclosing (when in its upwardly extended position), substantially the entire fluorescent tube, as a safety feature. Also included is a switch in series with the motor and biased to an open position; the



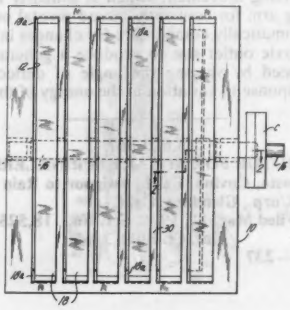
switch can be closed to energize the motor only by raising the telescoping protective tube.

3,623,673

REFUSE REDUCER

Irwin Math, Beechhurst, and Melvin Schrier, Bronx, both of N.Y., assignors to International Patents of Development, Kings Point, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,043
Int. Cl. B02c *7/16, 13/06*
U.S. Cl. 241—36 **13 Claims**



A refuse reducer, particularly for compactors, in which a plurality of blades displaced from each other angularly and spaced axially along a common shaft, are rotated through slotted passages within a stationary frame. Each of the blades have two elongated main parts assembled together with spring loading so as to tightly occupy the slots of the stationary frame. With rotation of the blades, shearing action is realized, for reducing the refuse, at the cutting edges on the slots of the stationary frame and the edges of the moving blade.

3,623,674

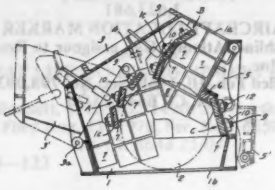
HAMMER CRUSHER

Gunter Alt, Saargemuender Strasse 59, Auersmacher (Saar), Germany

Original application Nov. 1, 1967, Ser. No. 679,762, now Patent No. 3,531,055. Divided and this application May 7, 1970, Ser. No. 35,423
Int. Cl. B02c *13/02, 13/282*
U.S. Cl. 241—189 R **9 Claims**

A hammer crusher wherein the internal surfaces of the housing **1** and breaker plates *A*, *B*, *C*, are provided with tessellated armors composed of rectangular and/or triangular metallic sections **7, 8** having slotted projections **9** extending through openings in the housing and breaker plates and receiving elastic wedges **10.** The feed inlet **1***a* is adjacent to a

chute 5 which is hinged to the housing, and the hammers 22 of the rotor 2 are held against radial and axial movement.



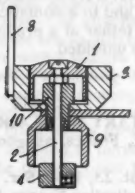
The end plates 31 of the rotor are provided with protective shoes 19 in front of the hammers.

3,623,675

DEVICE FOR WINDING UP THE INITIAL THREAD SUPPLY AT THE END OF A BOBBIN

Michele Ratti, 21016 Luino, Luino, Italy

Filed Oct. 27, 1969, Ser. No. 869,705
Claims priority, application Italy, Oct. 30, 1968, 23,139
Int. Cl. B65h *54/34*
U.S. Cl. 242—18 PW 5 Claims



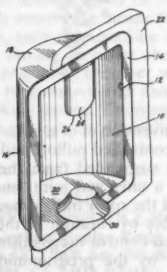
A device for winding up the initial thread supply at the end of a bobbin comprises a drum which is pushed up into a position to be engaged by the thread traveling between the thread supply and the bobbin. The thread turns the drum and runs the drum back down in a screw-threaded connection, thereby to disengage the thread from the drum after the thread has rotated the drum a certain number of rotations. A one-way screw-threaded connection is provided, comprising a ball which is urged by an inclined surface against the screw thread on a shaft carried by the drum, so that upward movement of the shaft disengages the ball and downward movement entrains the ball with the screw thread.

3,623,676

HOLDER FOR ROLLS OF BATHROOM TISSUE OR THE LIKE

Robert E. Eckels, 2101 Youngfield, Golden, Colo.

Filed Nov. 12, 1969, Ser. No. 875,730
Int. Cl. A47k *10/22, 10/32*
U.S. Cl. 242—55.53 6 Claims



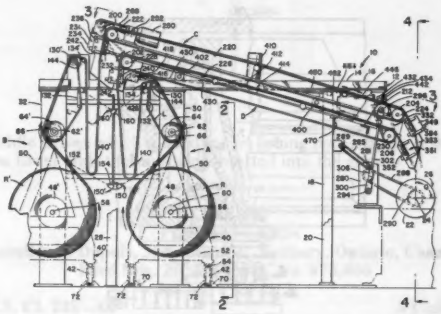
A holder for a roll of bathroom tissue or the like includes an open side container having a top downwardly directed stub shaft and a bottom upwardly directed conical stub shaft for holding a roll vertically therebetween. The upper shaft holds the top of the roll in upright position, and the space between the shafts permits the roll to be placed on and removed from the lower shaft. The lower shaft holds the bottom of the roll in a friction grip preventing accidental unwinding of the tissue.

3,623,677

TIRE PLY SERVER

Paul E. Appleby, Cuyahoga Falls, and James C. McGarr, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 3, 1969, Ser. No. 873,492
Int. Cl. B65h *17/18*
U.S. Cl. 242—67.3 23 Claims



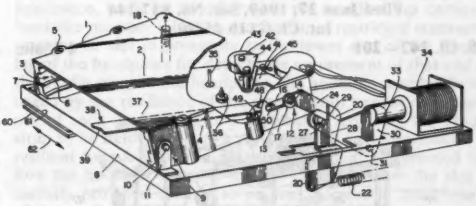
An apparatus for delivering to a drum of a tire-building machine one or more successive lengths of ply-forming material from large supply rolls in which by controlled movement, a leading edge or edges of said lengths are placed in predetermined contact or proximity to the drum by automatic means.
The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,623,678

CASSETTE TAPE PLAYING

Robert W. Housman, Winthrop, and Koichiro Hori, Melrose, both of Mass., assignors to Automatic Radio Manufacturing Company, Inc., Melrose, Mass.

Filed Feb. 17, 1969, Ser. No. 799,669
Int. Cl. G11b *23/10, 15/66*
U.S. Cl. 242—198 11 Claims



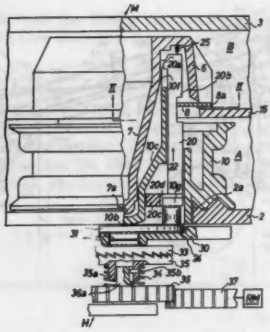
A cassette tape player, especially suitable for use in a vehicle, includes a cartridge guide assembly formed with a generally rectangular insertion opening for receiving a cassette that is inserted in a direction that has a horizontal and slight upward component and then guides the cassette downward into registration with the mechanism that drives and effects scanning of the magnetic tape. The invention includes a relatively simple mechanism for shifting among the

different functions, such as play, fast forward and fast reverse.

3,623,679
PHOTOGRAPHIC APPARATUS AND FILM MAGAZINE THEREFOR

Karl Neudecker, Munich; Johann Zanner, Unterhaching, near Munich; Alois Schwitz, Unterhaching, near Munich; Rudolf Blank, Cologne Dunnwald, and Ehgartner Gabriele, Pullach, near Munich, all of Germany, assignors to AGFA Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 20, 1969, Ser. No. 878,373
Claims priority, application Germany, Sept. 13, 1969, P 19 46 514.6; Apr. 25, 1969, Germany, P 19 21 278.3
Int. Cl. G03b *1/04;* **G11b** *15/32*
U.S. Cl. 242—194 **22 Claims**

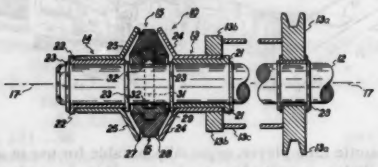


A magazine for motion-picture film which comprises a casing having first and second chambers for convoluted exposed and unexposed film, a core member rotatable in the first chamber and coaxial with unexposed film in the second chamber to respectively collect and pay out exposed film during rotation in first and second directions, and a blocking device including a sleeve movable axially of but rotatable with the core member and a disk mounted in the casing. A spring biases the sleeve into engagement with the disk to hold the core member against rotation in the second direction. A rotary output member of a drive in the camera moves the sleeve axially and away from engagement with the disk when the magazine is properly attached to the camera whereby the core member can be rotated in either direction as long as the magazine remains attached to the camera.

3,623,680
CLUTCH/BRAKE MECHANISM

Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed June 27, 1969, Ser. No. 837,144
Int. Cl. G11b *15/30*
U.S. Cl. 242—201 **1 Claim**



A commuter wheel is mounted on a threaded shaft between two pulleys. The pulleys are free to rotate on the shaft but are braced against movement along the axis of the shaft. The direction of shaft rotation determines which pulley is driven by the commuter wheel. The device is used to wind and rewind a tape between two spools.

3,623,681
AIRCRAFT LOCATION MARKER

Clifford E. Ashline, Atlanta, Ga., assignor to Res-Q-Mark International Inc.

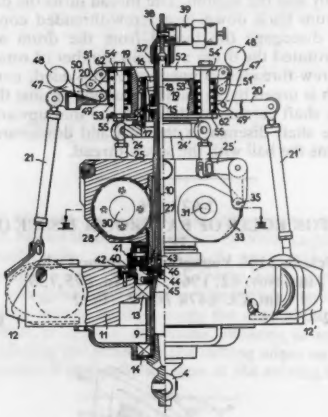
Filed Feb. 10, 1969, Ser. No. 798,093
Int. Cl. B64d *25/20*
U.S. Cl. 244—1 R **7 Claims**

A folded flexible conspicuous signal panel or parachute with apparatus to eject it from an aircraft and unfold it while attached to a tether and to automatically release the panel or parachute from the tether at a predetermined distance from the aircraft after it is unfolded.

3,623,682
ROTARY WING AIRCRAFT

Marcel Kretz, Paris, France, assignor to Giraviens Dorand, Suresnes, France

Filed Sept. 23, 1969, Ser. No. 860,380
Claims priority, application France, Sept. 27, 1968, 167938
Int. Cl. B64c *11/34*
U.S. Cl. 244—17.13 **8 Claims**



The described invention is of a rotary wing aircraft having an automatically controlled pulloff and landing capability, in which the craft is suspended from the rotor through a stationary shaft and a universal joint, and in which, upon the shaft, are arranged the rotor hub, a mechanical programming mechanism operable by rotation of the rotor relative to the shaft, a blade pitch-control mechanism of which the operation is controlled by the programming mechanism, and a ground-proximity probe arranged to initiate operation of the program on contact with the ground, all so as to render automatic the pulloff and landing controls.

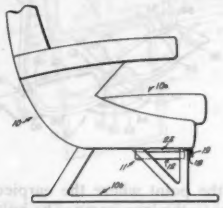
ERRATUM

For Class 244—118 see:
Patent No. 3,624,833

3,623,683
UNDERSEAT LIFE SAVING EQUIPMENT CONTAINER FOR AIRCRAFT

William B. Bennett, 1525 N.E. 149th St., North Miami, Fla.

Filed Aug. 11, 1970, Ser. No. 62,805
Int. Cl. B64d *25/04*
U.S. Cl. 244—122 7 Claims

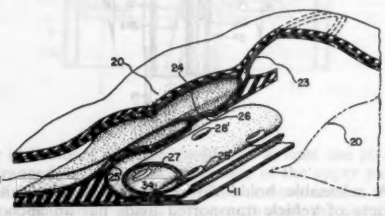


A novel life-saving equipment container for use with passenger chairs of the type used in commercial aircraft, including means for its removable attachment close up against the underside of the chair seat. The attachment means is in the form of front-to-back guide tracks affixed to the underside of the seat and cooperative with a shallow equipment container drawer having forwardly extending handle means conveniently accessible to a seated passenger for withdrawal of the container drawer preparatory for use of the life-saving equipment. The handle comprises a forwardly extending part of a flat cover member adapted to hermetically seal the life-saving equipment in the drawer prior to use of the equipment.

3,623,684
DEICING DEVICE

Ralph O. Kline, Stow, Ohio, assignor to The Goodyear Tire Company, Akron, Ohio

Filed Feb. 18, 1970, Ser. No. 12,407
Int. Cl. B64d *15/18*
U.S. Cl. 244—134 A 17 Claims



An improved deicing device or ice guard, preferably in the form of an inflatable deicing cover of flexible material including pneumatically responsive means for breaking or fracturing ice formations, such as extensible inflation tubes, and a manifold structure having an outer chamber with orifices therein and at least one inner chamber with similar orifices or openings therein to conduct and distribute an inflation media to the ice breaking means. The manifold structure provides an unrestricted passage for the inflation and deflation of the deicing device.

3,623,685
HANDLINE OR FISHPOLE HOLDER

Newell E. Thomson, Gorham Bridge Road, Florence, Vt.

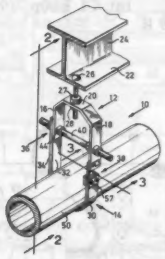
Filed July 18, 1969, Ser. No. 842,974
Int. Cl. A01k *97/10*
U.S. Cl. 248—38 1 Claim

A device for supporting a fishing pole or hand line in an elevated position, the device comprising a tubular stake into which there is inserted a flexible rod that protrudes upwardly therefrom, the upper ends of the rod and stake each having a saddle across which a handline or fishing pole may be rested, the lower ends thereof being inserted into the ground.

3,623,686
PIPE HANGERS

Aurelien P. Dupuis, 39 Stanley St., Sudbury, Ontario, Canada

Filed Nov. 20, 1969, Ser. No. 878,406
Int. Cl. F16l *3/12*
U.S. Cl. 248—60 4 Claims



A pipe hanger comprises a headpiece having first and second spaced apart and downwardly extending legs. A resilient cradle strap, usefully comprising a plurality of plies, is permanently secured at one end to one of the legs of the headpiece, while at its other end, the cradle strap carries a hooklike member which is received in a restricted transverse opening or slot in proximity to the lower end of the second leg of the headpiece for detachable securement of that end of the cradle strap to the headpiece, the hooklike member being urged by the resilience of the cradle strap against movement out of such an opening and preferably requiring the cradle strap to be deformed outwardly to permit such movement. A resilient tongue which must also be manually depressed before the hooklike member can be removed from the slot is usefully provided further to prevent accidental detachment of the cradle strap from the headpiece.

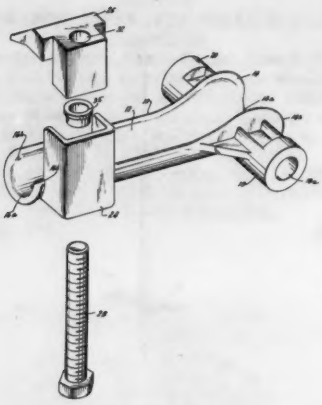
3,623,687
INSULATOR TOP CLAMP

Carl B. Nordstrom, Kingston, N.Y., assignor to Fargo Mfg. Company, Inc., Poughkeepsie, N.Y.

Filed June 15, 1970, Ser. No. 46,251
Int. Cl. F16l *3/10*
U.S. Cl. 248—74 R 2 Claims

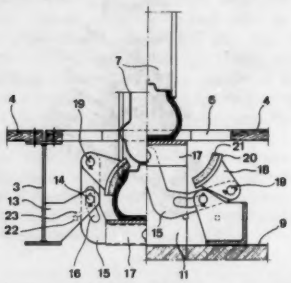
An insulator top clamp for connecting a cable to the top of

an insulator having a cable-receiving channel with a lip at one end with means for attaching the clamp to the insulator



for pivotal movement at that end and a jaw member at the remaining end for connecting the cable to the clamp.

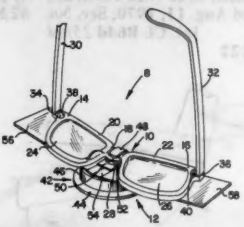
3,623,688
SECURING MEANS IN VEHICLE-TRANSPORTING PLATFORMS
Bo Kent Ansund, Gothenburg, Sweden, assignor to Trascandica A. G., Uetikon am See, Switzerland
Filed July 6, 1970, Ser. No. 52,526
Claims priority, application Sweden, July 18, 1969, 10,214/69
Int. Cl. B60p 7/06
U.S. Cl. 248—119 R **4 Claims**



The invention relates to a securing arrangement in platforms for transporting vehicles such as cars in a cargo ship, said arrangement comprising a plate adapted to support a vehicle wheel and being movable vertically relatively to the platform and also being pivotally secured to one end of a bellcrank lever projecting outwardly on either side of the plate, said bellcrank lever being pivotally journaled on a journal pin on a bracket secured to a firm part of the platform, said bellcrank lever at the other end being provided with a pivotable locking member having clamping means for the wheel and the arrangement being such that as the lever with the locking member is swung inwardly towards the wheel when the plate is lowered relatively to the platform then the wheel will be locked.

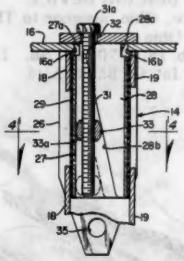
3,623,689
EYEGLASS FRAME ALIGNMENT HOLDER
Donald L. Johnston, 7324 Calumet, Hammond, Ind.
Filed July 14, 1969, Ser. No. 841,400
Int. Cl. F16m 11/04
U.S. Cl. 248—187 **10 Claims**

An eyeglass frame alignment holder adapted to retain a pair of eyeglasses in place thereon and to exert a slight but continuous force urging the outer margin of the eyeglass frame toward a rearward position and generally into coplanar alignment with the nosepiece. One described form of the invention is a holder in which retainer means in the form of a clip is provided for engaging the frame in the vicinity of the bridge to prevent rearward movement thereof, and in which two inclined leaf or wing portions are provided which are adapted to engage the spectacle frame adjacent its outer



margins near the point where the earpieces or temples are hingedly joined to the lens frame. The holder may be a piece of polished or felt-covered spring steel which, after a period of time, gradually returns the eyeglass frame to its original configuration. The clip may be a separate piece or may be integrally formed from the material comprising the wings, and the holder may includes a mounting base, or may include only the wings and the clip so as to provide increased portability without loss of effect.

3,623,690
RELEASABLE HOLDDOWN DEVICE
Dale L. Bargman, Jr., Broomfield, Colo., assignor to Colorado Leisure Products, Inc., Broomfield, Colo.
Filed Dec. 24, 1969, Ser. No. 887,900
Int. Cl. B60p 7/08
U.S. Cl. 248—361 **15 Claims**

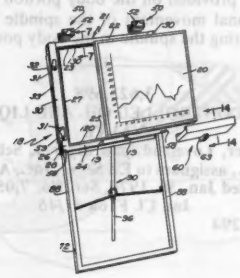


A releasable holddown device specifically suited for a variety of vehicle-transported loads has an anchoring unit releasably insertable into a hole such as the stake pocket of a vehicle bed including an attaching member adapted to connect to the load. The anchoring unit includes movable wedge members normally retained in a retracted position and expandable laterally away from one another into anchored engagement against the supporting wall of the hole by selectively controlling the movement of an actuating member therebetween and in such a way as to affect full surface engagement between wedge members and the supporting walls.

3,623,691
COLLAPSIBLE EASEL
Percy Frederick Albee, Jr., Barrington, R.I., assignor to Q-Panel Corporation
Filed Mar. 2, 1970, Ser. No. 15,365
Int. Cl. A47g 1/24
U.S. Cl. 248—454 **6 Claims**

A collapsible easel having a frame into which two of its legs telescopically contract, a third leg pivotally attached to

the easel whereby the frame may be tiltably supported at various angles both forwardly and rearwardly, a reversible panel having magnetic cork, slate, or other material on its opposite faces detachably mounted on the frame, external channels in the sides of the frame into which auxiliary structural members may be intermatingly attached, one such



structural member being in the form of extension arms with paper chart clips along their extent, the vertical arms also having hooks at their tops to which a projection screen may be attached and due to the versatility provided by the frame being adjustable to both forward and rearward angles, the screen may be used in conjunction with movie, slide and overhead projectors.

3,623,692

CASTING MOLD

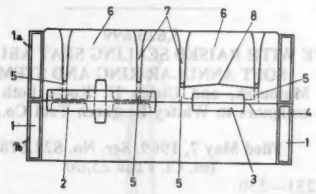
Erwin Buhrer, Breitenaustrasse 164, Schaffhausen, Switzerland

Filed May 26, 1969, Ser. No. 827,793

Claims priority, application Switzerland, May 27, 1968, 7864/68

Int. Cl. B22c *9/08*

U.S. Cl. 249—107 **3 Claims**



There is disclosed a casting mold with at least one pouring basin arranged at the top or upper side of the upper part of the mold. This pouring basin is in flow communication with a number of pour-in openings or gates through the agency of channels or troughs. According to an important aspect of the invention, the channel depth is greater than the minimum depth of a channel necessary to prevent overflow during the pouring-in operation, but the channel depth does not drop below the highest location of the mold cavity.

3,623,693

ASSEMBLAGE FOR USE WITH A ROAD VEHICLE THROTTLE VALVE FOR ACHIEVING FUEL ECONOMY

William Frank Hill, Stafford, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

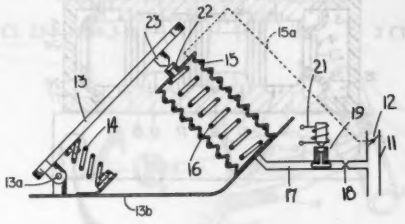
Filed July 14, 1969, Ser. No. 841,253

Claims priority, application Great Britain, July 25, 1968, 35,484/68

Int. Cl. F15b *9/10*; **F16k** *31/12*

U.S. Cl. 251—26 **1 Claim**

In a road vehicle the throttle pedal is servo assisted, but the servo assistance is removed under predetermined conditions so that the drive has to press the pedal harder. The predetermined conditions can be chosen so that if pinging occurs the driver receives a signal that he must ease back on



the throttle pedal so as to regain the servo assistance. In this way fuel economy can readily be obtained.

3,623,694

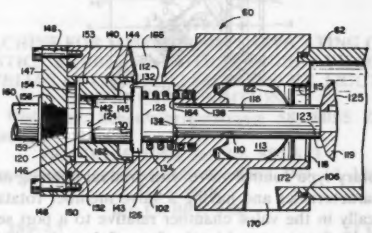
FLUID-OPERATED VALVE

Seymour Goldberg, Lexington, Mass., assignor to EG&G, Inc., Bedford, Mass.

Continuation-in-part of application Ser. No. 22,425, Mar. 25, 1970. This application Aug. 31, 1970, Ser. No. 68,196

Int. Cl. F16k *31/143*

U.S. Cl. 251—61.4 **20 Claims**



A fluid-operated valve for controlling the flow of pressurized fluid to and from a fluid-operated device, such as a hydraulic cylinder, is provided. The valve design provides an initially large operating force to open the valve and a subsequent lesser operating force to move the valve to its fully open position. In addition, the valve is designed for automatic closing when a predetermined back pressure occurs in the fluid-operated device. The valve includes a fluid control chamber for receiving pressurized fluid to control the pressure required to operate the valve.

3,623,695

FLUID FLOW CONTROL VALVES

John W. Hislop, Owen Road, Wolverhampton, Staffordshire, England

Filed Jan. 21, 1970, Ser. No. 4,725

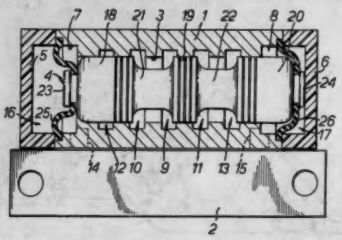
Claims priority, application Great Britain, Jan. 21, 1969, 3277/69

Int. Cl. F16k *31/12*, *11/07*; **F16f** *1/32*

U.S. Cl. 251—75 **5 Claims**

A fluid flow control valve comprising a spool which is reciprocable axially between two alternative extreme positions each determined by abutment of the spool against a stop fixed in the valve, and at least one resilient diaphragm of which the central zone is anchored to and concentrically of the spool, the peripheral zone is anchored to and between the ends of the wall of a concentric chamber in the valve and the area exceeds the cross-sectional area of the chamber by

an amount such that, when the spool is in either of its alternative extreme positions, the diaphragm portion between the



said zone is deformed into a cup shape and resists axial displacement of the spool away from the stop.

3,623,696

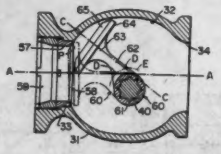
ECCENTRIC, SEALLESS, ROTARY VALVE FOR FLOW CONTROL

Hans D. Baumann, Foxborough, Mass., assignor to Masoneilan International, Inc., Norwood, Calif.

Continuation-in-part of application Ser. No. 703,318, Feb. 6, 1968, now abandoned. This application Dec. 30, 1969, Ser. No. 889,030

Int. Cl. F16k *1/20*

U.S. Cl. 251—85 **11 Claims**



A rotary-type control valve with gradual opening and closing characteristics and having a valve member rotatable eccentrically in the valve chamber relative to a port seat with an annular face engaged by the face of the valve member to provide a metal-to-metal seal for blocking fluid flow through the valve. Power and manual operating means are connected to the control valve which, as a unit, can be installed and removed from suitable connecting means in a conduit.

3,623,697

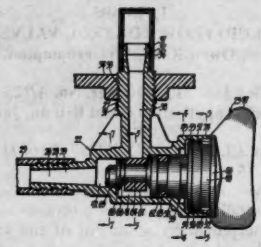
COCKS OR TAPS

George Alfred Braisby Austin, Noble Park, Victoria, Australia, assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 4, 1969, Ser. No. 873,866

Int. Cl. F16k *31/524*

U.S. Cl. 251—261 **3 Claims**



A tap, particularly for use on petrol engines and the like for control of the flow of petrol to the engine, is provided with a body portion having a fluid inlet and a fluid outlet, and an operating spindle extending into the body portion. The spindle carries an eccentrically disposed journal having a resilient sealing bush, and on rotation of the spindle, the sealing bush engages and seals the fluid inlet in the body portion. Fluid-sealing means are provided between the body portion and the spindle to prevent leakage of fluid along the spindle, and means are provided on the body portion and the spindle to limit rotational movement of the spindle and to provide means for securing the spindle in the body portion.

3,623,698

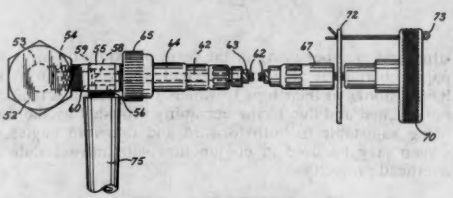
REMOTE CONTROLLED OIL AND LIQUID DRAIN VALVE

John R. Couper, Loveland, and Myer J. Schaffner, Arvada, both of Colo., assignors to EZ Serve, Inc., Arvada, Colo.

Filed Jan. 30, 1970, Ser. No. 7,058

Int. Cl. F16k *31/46*

U.S. Cl. 251—294 **3 Claims**



A drain valve for oil and other liquids includes a plug for the outlet for such liquids having a passage therethrough, a connector in the passage in the plug and valve with a downwardly directed outlet part controlling the passage in the connector. A flexible, sheathed cable extends from the valve to an accessible location, preferably under the hood, for opening and closing the valve. Means are provided for biasing the valve in closed position.

3,623,699

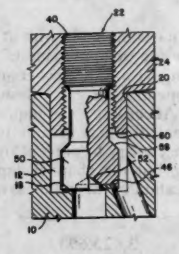
VALVE WITH RAISED SEALING SEAT ABUTTING A SOFT ANNULAR RING AND STEM

Stephen Matousek, and Ulrich H. Koch, both of Moraga, Calif., assignors to Whitey Research Tool Co., Emeryville, Calif.

Filed May 7, 1969, Ser. No. 822,678

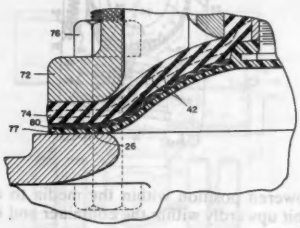
Int. Cl. F16k *25/00*

U.S. Cl. 251—330 **10 Claims**



This invention concerns a valve having a soft annular ring embedded in the inner end of the valve stem intermittently to seal against a raised seat in the fluid flow passage of the valve. The valve body includes certain conventional structure such as a flow passage terminating in an inlet and an outlet, bonnet means having a stem projecting therethrough into the passage and a handle on the outer end of the stem. The annular ring is made thicker than the height of the raised valve seat to prevent severing of the ring.

3,623,700
DIAPHRAGM VALVE
Henry W. Boteler, East Greenwich, R.I., assignor to Grinnell Corporation, Providence, R.I.
Filed Nov. 5, 1969, Ser. No. 874,231
Int. Cl. F16k 7/16
U.S. Cl. 251—331 1 Claim



A diaphragm valve having gas-conducting channels which are located between the inert diaphragm and the resilient backing sheet and which extend from the interior of the valve across the clamped margins of the diaphragm and backing sheet to the edges thereof to carry to the outside of the valve any gas which may pass through the diaphragm and buildup between it and the backing sheet.

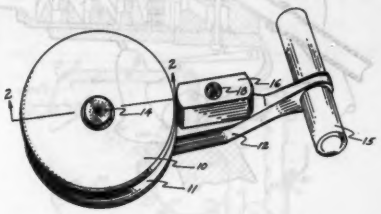
ERRATUM

For Class 254—122 see:
Patent No. 3,623,707

3,623,701
DEVICE FOR INSTALLING ROPE ON A FLAGPOLE
Paul M. Dudley, 16 Ponderose Drive, Hampton, Va.
Filed June 10, 1970, Ser. No. 45,067
Int. Cl. E21c 29/16
U.S. Cl. 254—134.3 R 7 Claims

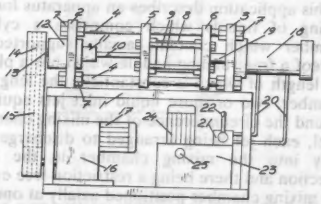
The entrance to the socket carried by the upper end of the rod is placed close to one side of the periphery of the pulley and the spring, disposed in the socket, is lifted out and forced around the upper peripheral portion of the pulley by pulling downwardly on the string attached to the lower end of the spring. The string is then released and the weight of the portion of the spring which extends outwardly beyond the other side of the pulley causes the spring to fall downwardly, drawing with it the string. The rope to be installed is then attached to the string and the string is pulled back over the pulley drawing with it the attached rope.

3,623,702
WIRE PULLING TOOL
John W. Wassell, Sr., Box 79, Route 3, Severn, Md., and Paul D. Wiser, 2660 Johnson Road, Boothwyn, Pa.
Filed June 23, 1969, Ser. No. 835,360
Int. Cl. E21c 29/16
U.S. Cl. 254—134.3 R 2 Claims



A tool for facilitating the pulling of strands between spaced supports to which the strands are to be attached which consists generally of a handle with a grooved pulley mounted thereon and a rotatable key mounted on the handle adjacent the pulley which may be turned from an open position to permit placing a loop of the strand over the pulley to a closed position to prevent the strand loop from leaving the pulley when not in taut condition and the method of pulling strands using said tool which includes the steps of fastening the ends of strands being fed from storage rolls to one support adjacent the storage rolls, looping said strands over the pulley, pulling the tool with the strands looped over the pulley to a second support and finally fastening the strands thus pulled to the spaced supports.

3,623,703
MACHINE FOR MIXING AND PLASTICATING OF PLASTICS, RUBBER AND OTHER HIGHLY VISCOUS MATERIALS AT CONTROLLED PRESSURE, FRICTION AND SHEAR CONDITIONS
Henrik Nielander, Schaufelbergerstrasse 58, 8055 Zurich, Switzerland
Filed Dec. 5, 1969, Ser. No. 882,613
Claims priority, application Switzerland, Dec. 10, 1968, 18219/68
Int. Cl. B01f 9/00
U.S. Cl. 259—3 21 Claims

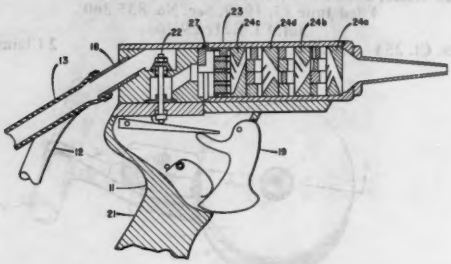


A mixing and plasticating machine which comprises a mixing and plasticating cylinder and a mixing and plasticating rotor with passages, the shaft of said mixing and plasticating rotor being connected to a rotary drive outside the mixing and plasticating cylinder. The mixing and plasticating cylinder and the mixing and plasticating rotor are axially movable in relation to each other. By means of this relative axial motion of rotor and cylinder the inside wall of the mixing and plasticating cylinder is scraped off by the mixing and plasticating rotor and the material in the cylinder is pressed through said passages at friction and shear.

3,623,704
STATIC MIXING DEVICE
Max Skobel, Edison, N.J., assignor to Dow Corning Corporation, Midland, Mich.
Filed Aug. 3, 1970, Ser. No. 60,465
Int. Cl. B01f 15/04
U.S. Cl. 259—4 8 Claims

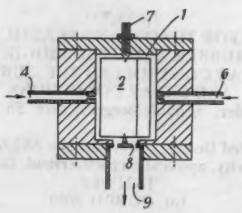
A static mixing device for mixing two liquid components by sequentially combining, dividing and recombining streams

including a sequential series of sets of parallel dividing and recombining elements, each element having a single point of entry or exit at one end and multiple points of exit or entry



on its opposite end, all liquid paths through each element having substantially equal mean lengths. The device may be made extremely small and is adapted for hand-held operation.

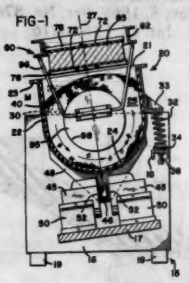
3,623,705
SOLUTION MIXING APPARATUS
James Arthur Townsley, and Roy Trunley, both of Ilford, England, assignors to Ilford Limited, Ilford, England
Filed Nov. 8, 1968, Ser. No. 774,448
Claims priority, application Great Britain, Nov. 9, 1967, 51121/67
U.S. Cl. 259—8 **1 Claim**



This application describes an apparatus for the continuous mixing of liquids which comprises a cylindrical mixing chamber which contains axially supported at both ends thereof a free running paddle which has a plurality of blades the length of which is substantially the length of the mixing chamber, two or more liquid inlet jets equidistantly spaced around the circumference of the mixing chamber at the same level, each jet being arranged to discharge liquid tangentically into the mixing chamber in the same rotational direction and there being a restriction-free exit aperture from the mixing chamber positioned axially at one end of the mixing chamber, the other end being closed.

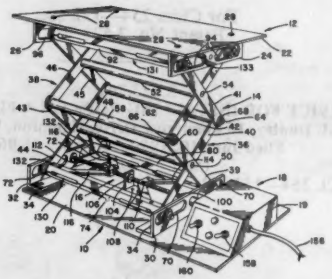
3,623,706
VIBRATORY APPARATUS
Max Isaacson, Dayton, Ohio, assignor to Vibrodyne, Inc., Dayton, Ohio
Filed June 22, 1970, Ser. No. 48,114
Int. Cl. B01f *11/00*
U.S. Cl. 259—29 **9 Claims**

An open-top tub or container is supported by springs to effect orbital movement of a load of parts and media within the container. An endless belt conveyor has a lower run positioned adjacent the open top of the container, and a permanent magnet is disposed within the conveyor to attract parts upwardly from the treating media for transport by the conveyor to a discharge station. A pivotal frame supports the conveyor and magnet for movement as a unit between a parts-removing position adjacent the container and an upper retracted position, and wheels support the conveyor and magnet for horizontal movement as a unit to provide for removing parts from a plurality of containers. An optional directing member is also supported by the frame for corresponding movement between an upper retracted position



and a lowered position within the media to assure that the parts orbit upwardly within the container and into the field of the magnet.

3,623,707
LABORATORY JACK
Edward M. Klopp, Seville, Ohio, assignor to The Chemical Rubber Company, Cleveland, Ohio
Filed Nov. 5, 1969, Ser. No. 874,233
Int. Cl. B66f *3/22*
U.S. Cl. 254—122 **5 Claims**

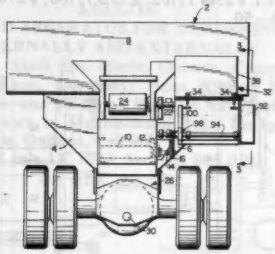


A platform jack apparatus of the type using scissors-type mechanisms. The platform or load support is carried on the scissors mechanisms and means are provided for selectively actuating the scissors mechanisms to raise and lower the platform. The actuating means comprises a rotatably driven screw rod carrying nut members thereon. Connecting bars or links extend from the nut members to the lower ends of the scissors mechanisms so that rotation of the screw rod produces vertical movement of the platform. The relationship between the screw rod, the connecting links, and the scissors mechanisms is such that for any one load, the force input required is substantially constant throughout the platform's range of movement.

3,623,708
SYSTEM AND MEANS FOR SELECTIVELY MIXING CONCRETE AND INCORPORATING DRY ADDITIVES THEREIN
Robert C. Futty, Willow Street, and John L. Kugle, Lancaster, both of Pa., assignors to IRL Daffin Associates, Incorporated, Lancaster, Pa.
Filed Apr. 1, 1969, Ser. No. 811,828
Int. Cl. B28c *7/04*
U.S. Cl. 259—164 **17 Claims**

A novel system and means for selectively mixing concrete and incorporating dry additives therein is disclosed. The basic raw materials for the concrete itself are supplied, in dry form, from a truck into an auxiliary mixing trough associated with the truck. Dry, solid additives, preferably in granular

form, although finer modulus material may also be used, are then incorporated into the concrete batch being prepared in the mixing trough for the purposes of imparting antifreeze, water-reduction, and/or coloring properties to the selected batch. A novel apparatus is utilized for delivering the dry additives to the concrete batch, the novel apparatus incorporating a hopper assembly into which the dry additives are placed. The hopper assembly contains a unique mixing agitator means for mixing and breaking up the dry additive ingredients. Disposed below the mixing agitator means is a controlled feed means which selectively controls the amount of dry additives passed out from the hopper into a lateral conveyor means which preferably comprises an enclosed, auger arrangement. The dry additives, in selective and controlled portions, are conveyed by the auger arrangement into the auxiliary mixing trough whereupon such dry additives are incorporated into the concrete batch.

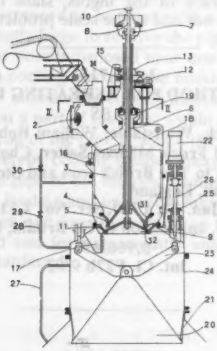


3,623,709

APPARATUS FOR CHARGING AND FOR DISTRIBUTING CHARGES IN SHAFT FURNACE

Robert Dorville, Paris, France, assignor to Societe Industrielle Delattre-Levivier S.I.D.L., Paris, France

Filed July 14, 1970, Ser. No. 54,677
Claims priority, application France, Aug. 22, 1969, 6,928,827
Int. Cl. F27b *1/20*
U.S. Cl. 266—27 **3 Claims**



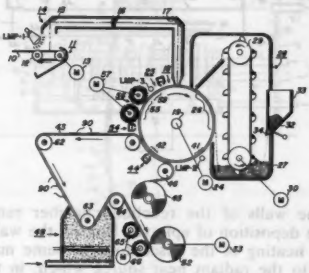
Apparatus for charging and distributing a charge in a shaft furnace having a fluidtight envelope above the furnace, a large bell providing a seal at the base of this envelope and distributing the charges in the furnace, a rotary cone situated above the large bell and closed at the bottom by a rotatable small bell, a lower small bell situated between the two preceding bells, means for opening the bells, and a device for charging the rotary cone, the rotary cone being in a fluidtight envelope which the nonrotatable small bell closes, the small bells are coaxial and vertically displaceable, the rotatable small bell can pass through a seal for the nonrotatable small bell and the envelope has a stop for arresting the cone.

3,623,710

FIXING ARRANGEMENT

Robert H. Detig, Old Tappan, N.J., assignor to Xerox Corporation, Rochester, N.Y.

Filed Oct. 30, 1969, Ser. No. 872,558
Int. Cl. G03g *13/20, 15/20*
U.S. Cl. 263—6 E **2 Claims**



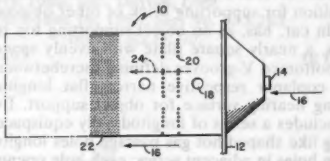
Method and apparatus for affixing electroscopic toner images onto a support in which a quantity of particulate material is heated to a temperature sufficient to produce at least a partial melting of the particular toner material to be fused and the toner material on the support is then contacted with the heated particulate material to induce a transfer of the thermal energy in the particulate material to the toner material on the support.

3,623,711

COMBUSTOR LINER COOLING ARRANGEMENT

Rolf A. Thorstenson, Westport, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed July 13, 1970, Ser. No. 54,302
Int. Cl. F23l *9/04*
U.S. Cl. 263—19 A **3 Claims**



The liner of a combustion chamber is provided with perforations through which coolant air passes. The perforations are sized so that a transpiration cooling effect results and the shape of the perforations is such that a component of flow of coolant air is produced along the thermally exposed surface of the liner. Thus, air passing through the perforations provides the combination of transpiration cooling and film cooling.

3,623,712

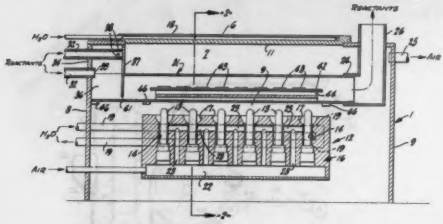
EPITAXIAL RADIATION HEATED REACTOR AND PROCESS

Michael A. McNeilly, and Walter C. Benzing, both of Saratoga, Calif., assignors to Applied Materials Technology, Inc., Santa Clara, Calif.

Filed Oct. 15, 1969, Ser. No. 866,473
Int. Cl. F27b *5/00*
U.S. Cl. 263—41 **9 Claims**

Apparatus and process for vapor depositing epitaxial films on substrates. A gaseous reactant is introduced into a reaction chamber formed from a material, such as quartz, which

is transparent and nonobstructive to radiant heat energy transmitted at a predetermined short wavelength. A graphite susceptor, which is opaque to and absorbs the radiant heat energy, is positioned within the reaction chamber and supports the substrates to be coated. The susceptor is heated



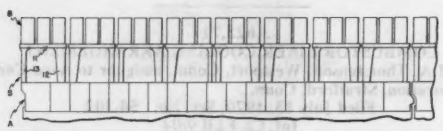
while the walls of the reaction chamber remain cool to preclude deposition of epitaxial film on the walls. To insure uniform heating of the susceptor, the same may be moved relative to the radiant heat source which, in the preferred embodiment, comprises a bank of tungsten filament quartz-iodine high intensity lamps.

3,623,713

KILN CAR DECK STOOL

Norman E. Denison, 19800 Frazier Drive, Rocky River, Ohio

Filed Apr. 6, 1970, Ser. No. 25,739
Int. Cl. F27d *5/00*
U.S. Cl. 263—47 R **12 Claims**



A three- or four-legged deck stool of castable refractory composition for supporting brick or other objects to be fired on a kiln car, has, as an object-supporting top integral with the legs, a nearly square plate with evenly spaced, parallel, round-bottomed V-grooves defining therebetween like ridges having coplanar respective narrow flat longitudinal lands providing bearing surface for object support. Every second ridge includes a series of longitudinally equispaced upwardly tapering like shaped hot gas passage holes longitudinally offset from holes in adjacent series; each hole opening upwardly symmetrically through the land and sloping walls on each side thereof. For building brick firing, the stools are preferably fabricated of a petalite or cordierite or equivalent castable refractory composition, and so proportioned, with a slight spacing between adjacent stools, as to provide an effectively continuous object supporting plane coextensive with but spaced from the car top, and effectively longitudinally continuous from car to car in a tunnel kiln.

In subjecting a number of objects to the action of hot gases, as in firing brick, tile and other ceramic objects, or for heating objects for other purposes, it is necessary to provide support equipment on which the objects may be arrayed, spaced in relation to each other and also vertically above a movable support such as a kiln car, so that a required application, distribution and circulation of hot gases to or about the objects is obtained.

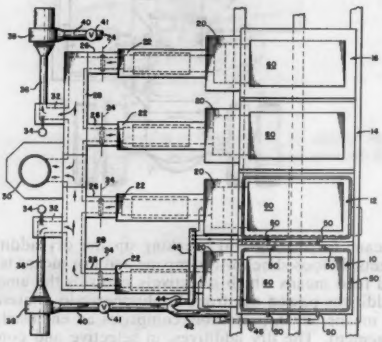
In the case of tunnel kiln firing, the objects are supported on a kiln car by spacing means of refractory composition, such as deck stools; and the present invention, though having broader application, is herein described in terms of kiln car deck stools for supporting building brick to be fired. With known suitable refractory compositions, for a given support or stool structure there is usually a compromise made in the actual composition and processing of the refractory material used between load supporting strength, brittleness, refractory character, and the heat shock resistance obtained in the final refractory stool.

3,623,714

METHOD OF AND APPARATUS FOR OPERATING A FURNACE

Benjamin C. Firmin, Wexford, Pa., assignor to Rust Furnace Company, Pittsburgh, Pa.

Filed Dec. 2, 1969, Ser. No. 881,534
Int. Cl. F23m *11/02*; **F27b** *17/00*; **F27d** *21/00*
U.S. Cl. 263—50 **11 Claims**



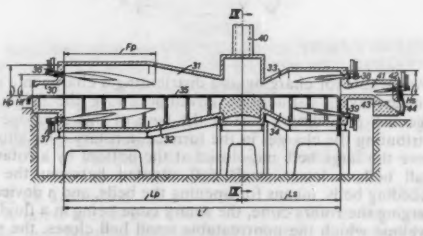
A method of and apparatus for operating a furnace, such as of the soaking pit, walking beam or car types, wherein the furnace enclosure is formed by stationary elements or walls as well as at least one movable element or wall. The movable portion of the enclosure is spaced from the stationary portion to provide clearance for relative movement therebetween. The waste gases of combustion are diverted while en route to an exhaust stack, are cooled to a suitable temperature, and are directed into and through the space between the stationary and movable portions to create a pressure barrier therebetween. In this manner, superatmospheric waste gases within the furnace are contained and the atmosphere within the furnace is maintained so that it will not have a deterent effect on the surface of the ingots, slabs or billets being heated, i.e. it does not add to the scale problem.

3,623,715

FURNACE METHOD FOR REHEATING BILLETS OR SLABS

James Alan Costick, Whitstable; William Robert Laws, Worcester Park, and Frank Michael Salter, Chatham, all of England, assignors to The British Iron and Steel Research Association, London, England

Filed Jan. 21, 1970, Ser. No. 4,517
Claims priority, application Great Britain, Feb. 4, 1969, 5,966/69
Int. Cl. F27b *9/02*
U.S. Cl. 263—52 **2 Claims**



A slab-reheating pusher furnace has a preheating zone followed by a major soak zone. A burner in the preheating zone

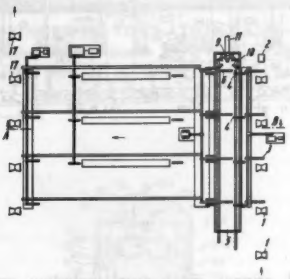
is arranged so that the flame travels in the same direction as the slabs and a burner in the soak zone is arranged so that the flame travels in the opposite direction. The length of the preheating zone is greater than the length of the soak zone and various other dimensions of the furnace are specified which result in an increased throughput.

3,623,716

METHOD AND APPARATUS FOR HARDENING PIPES INTERNALLY AND EXTERNALLY

Werner Fritsch, Sault Ste. Marie, Ontario, Canada; Anton Dunnewald, Haan, Germany; Hans Ribken, Sault Ste. Marie, Ontario, and Friedrich Wilhelm Kruppert, Ontario, Canada, assignors to Mannesmann Tube Company Ltd., Sault Ste. Marie, Ontario, Canada

Filed July 18, 1969, Ser. No. 843,052
Int. Cl. C21d *1/62*
U.S. Cl. 266—6 R **14 Claims**



An apparatus for hardening long pipes internally and externally has a tank arranged to be filled with a cooling medium and being sufficiently large to receive the pipe on its interior, a cooling medium nozzle disposed near one end of the tank and supplied with cooling medium; the nozzle has a body and a tip arranged for introducing cooling medium in the pipe in such a manner that a part of the tip is within and peripherally spaced from the end of the pipe at which the cooling medium is introduced, whereby cooling medium may be drawn from the exterior of the pipe to the interior through the space thus defined; and pipe loading and unloading means for delivering a pipe into the tank and for supporting it in the tank while it is being hardened and for subsequently unloading the pipe after it has been hardened.

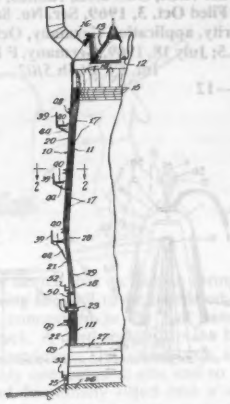
3,623,717

SELF-SUPPORTING BLAST FURNACE SHELL AND METALLIC LINING FOR BLAST FURNACE

Lawrence G. Maloney, Munster, and William E. Slagnley, Crown Point, both of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Aug. 7, 1968, Ser. No. 750,968
Int. Cl. C21b *7/00*
U.S. Cl. 266—25 **12 Claims**

A one-piece, integral blast furnace shell, the totality of which is self-supporting and which extends continuously, without interruption from the top of the stack to the bottom of the hearth. No mantle; no columns.
A fluid-cooled internal metallic lining for a blast furnace. The lining extends continuously, without interruption, and without sharp angular changes, from the top of the stack to the lower part of the bosh. The lining is movably mounted to accommodate thermal changes in furnace.



ERRATUM

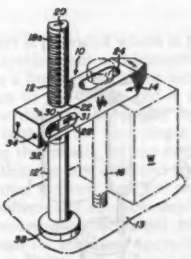
For Class 266—27 see:
Patent No. 3,623,709

3,623,718

CLAMP ASSEMBLY

Eugene J. Thomeczek, Sr., Dayton, Ohio, assignor to Northwestern Tools, Inc., Dayton, Ohio

Filed June 16, 1969, Ser. No. 833,263
Int. Cl. B23g *3/02*
U.S. Cl. 269—91 **18 Claims**



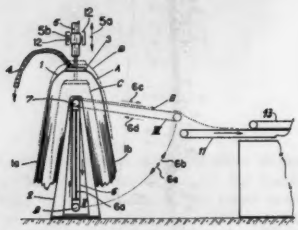
A clamping unit of the invention comprises an elongated rodlike rack having at least one longitudinally extended series of slots, the slots being angled generally transverse to and spaced at selected intervals along a portion of the rod length. A clamping bar mounted on and movable along said rack includes means for a releasably fixed engagement thereof with the means defining at least one of said slots.

3,623,719

METHOD AND APPARATUS FOR TRANSFERRING FLAT, FLEXIBLE SHEETS ONTO A CONVEYOR

Jiri Dokoupil, Oberursel/Taunus, and Jiri Zubik, Obersteden/Taunus, both of Germany, assignors to Maschinenfabrik Turner A.G., Oberursel/Taunus, Germany

Filed Oct. 3, 1969, Ser. No. 863,585
Claims priority, application Germany, Oct. 7, 1968, P 18 01 674.5; July 18, 1969, Germany, P 19 36 717.0
Int. Cl. B65h 5/02
U.S. Cl. 271—12 22 Claims



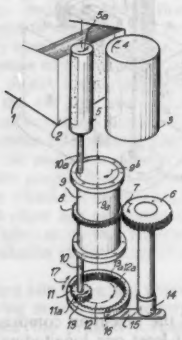
The present invention relates to a method and apparatus for transferring flat, flexible sheets, especially leather from a storage position to a conveyor, wherein the sheets are first placed on a movable surface while maintaining such surface in a substantially vertical position and then tilting the surface toward said conveyor. The apparatus for performing such method comprises a movable, tiltable surface supported on a frame and sheet suction means movable back and forth between a sheet storage position and a position above the frame, said surface comprising at least one endless belt or a series of rollers actively driven, said rollers being rotatably supported on shafts rigidly connected to each other and one of the shafts being operatively connected to tilting means which tilt the movable surface constituted by said belt or rollers back and forth through a tilting angle to direct the sheet toward said conveyor.

3,623,720

HIGH-SPEED LABELLING MACHINE

Romuald Rene Della Vite, Nogent sur Marne, France, assignor to Societe Francaise Anonyme dite: Societe Francaise d'Etiquetage Virey & Garnier, Nogent sur Marne, France

Filed Mar. 23, 1970, Ser. No. 21,708
Claims priority, application France, Nov. 20, 1969, 69.39913
Int. Cl. B65h 3/10
U.S. Cl. 271—27 6 Claims



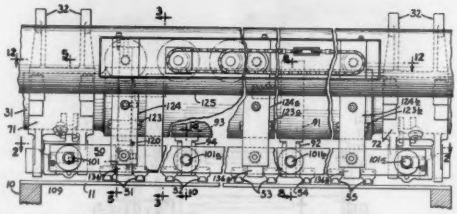
The present invention relates in general to high-speed labelling machines and is concerned more particularly with the device incorporated in machines of this type for picking up labels from the label box or magazine and delivering them to a transfer cylinder adapted subsequently to deliver the labels to a gumming or gluing device before distributing them to the periphery of a turret adapted to lay the labels to the containers, bottles or other articles to be labeled.

3,623,721

MEANS FOR OVERCOMING FAN-OUT IN LITHOGRAPHIC PRESS

Walter S. Smith, Naperville, Ill., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Oct. 27, 1969, Ser. No. 869,565
Int. Cl. B65h 9/12
U.S. Cl. 271—53 12 Claims



An infeed gripper mechanism including an oscillated transfer assembly for transferring a sheet from a feed table to a constantly running impression cylinder by means of a series of gripper pads which grip the leading edge of the sheet and which are biased into aligned reference position. Fixed but adjustable stops are provided on the frame in the path of movement of the gripper pad mounting means for displacing certain of the pads from reference position so that the pads occupy an arcuate, or bowed, locus upon gripping the sheet. Subsequent restoration of the pads to reference position upon leaving the stops thus imparts a reverse bow to the leading edge of the sheet to overcome fan-out at the trailing edge. In the preferred embodiment, the pad mounting means is in the form of a pad bar to which all of the pads are secured and which is deformed into bowed shape upon obstruction by the fixed stops. Also in the preferred embodiment each of the fixed stops is in the form of a lever having a stop surface adjusted by a manually rotated positioning screw and with an overpowered spring effectively in series to protect against damage or breakage in the event a foreign object is interposed.

3,623,722

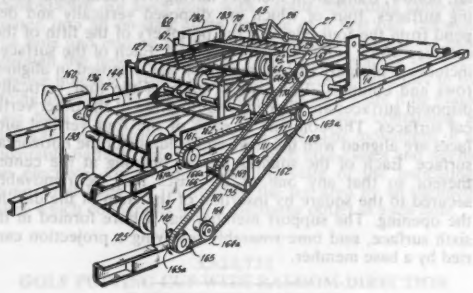
AUTOMATIC SWITCH FOR STREAM DIVERTER

Christer Sjogren, River Edge, and John F. Green, West Milford, both of N.J., assignors to AB Bonnierforetagen, Stockholm, Sweden

Filed Aug. 31, 1970, Ser. No. 68,193
Int. Cl. B65h 29/58
U.S. Cl. 271—64 17 Claims

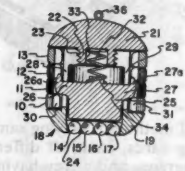
A stream diverter for signature streams and the like including a mechanism for gripping and temporarily halting the stream to form a gap therein. Sensing means, upon detection of the presence of the gap in a predetermined location, activates a deflector bar and a pivotable roller assembly to move the cooperating diverter elements between either an upper or lower position for diverting the signature stream to either an upper or lower conveyor level, respectively. Im-

mediately after movement of the pivotal roller assembly and deflector lever, the gripping means is released to permit the



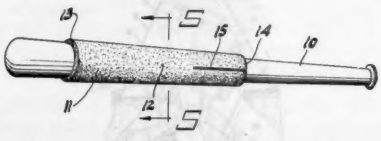
flow of signatures to resume. The diverter is adapted to operate in either direction with equal effectiveness.

3,623,723
FINGER MANIPULATION GAME
Charles E. Helbach, 2937 South 2910 West, Granger, Utah
Filed July 16, 1969, Ser. No. 842,174
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R 7 Claims



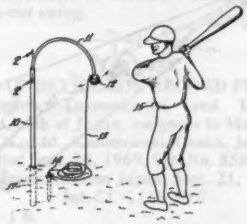
A game having three-dimensional objects that are placed around the fingers of a player. Objects having a characteristic corresponding to the objects on the fingers are randomly positioned to be simultaneously viewed by the viewer and the objects on the fingers are manipulated by the user to transpose the positions of the objects on the fingers as necessary, until they correspond with the randomly positioned objects.

3,623,724
BAT BALANCER
Leon A. Lande, 1054 Riverbank, Lincoln Park, Mich.
Filed Feb. 9, 1970, Ser. No. 9,839
Int. Cl. A63d *15/10*
U.S. Cl. 273—26 B 9 Claims



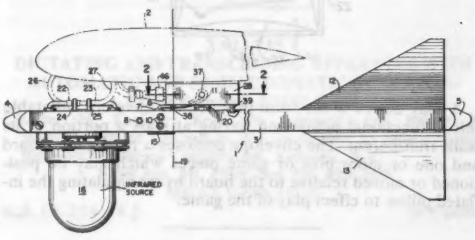
A bat balancer comprising a frustoconically shaped weight sleeve member which is adapted to be slid onto a baseball bat from the knob end thereof. The bat balancer adds weight to a bat but maintains the balance of the bat by adding an equal amount of weight above and below the balance point of the bat.

3,623,725
BATTING PRACTICE DEVICE
Robert L. Setten, Sr., 282 Magnolia, Orange, Calif.
Filed Jan. 31, 1968, Ser. No. 702,097
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 E 4 Claims



A batting practice device that includes a spring arm carrying a ball and allowing the ball to be oscillated to present a moving target, the connection to the ball being separable when the ball is struck. A cord secured to the ball limits its travel and permits retrieval. The spring arm is a resilient plastic tube releasably connected at one end to the ball and having its other end frictionally fitted into a vertical pole mounted in the ground.

3,623,726
AERIAL TOW DART DEPLOYABLE FROM A TARGET DROVE WITH A BALLISTICALLY ACTUABLE DEPLOYMENT STATION
Abraham L. Pittinger, Scottsdale; Rex V. Taylor, Tempe, and Raymond W. Thomas, Phoenix, all of Ariz., assignors to Talley Industries, Inc., Mesa, Ariz.
Filed Dec. 9, 1968, Ser. No. 782,301
Int. Cl. F41j *9/06*
U.S. Cl. 273—105.3 9 Claims

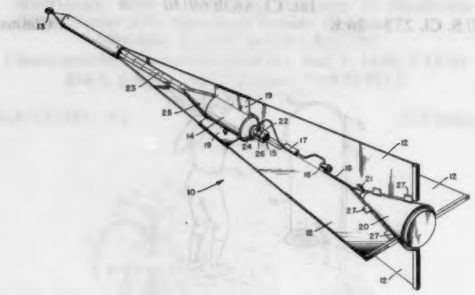


An aerial tow dart is provided which is towable by a target drone and is deployable from and jettisonable by the drone. The tow dart emits a homing signal for attracting a missile to the dart rather than to the drone, and is deployed such that the drone and tow dart are separated by a distance sufficiently small that both appear as a single target to the gunnery operator firing the missile. In one embodiment, the tow-cable is carried within the tow dart and fed through a pair of snubbing posts within the tow dart for regulating payout of the tow-cable. A ballistically actuable deployment station for each tow dart is mounted on the target drone and is responsive to control signals for initiating operation of the source of homing signals in the tow dart, releasing and deploying the tow dart, and releasing the tow-cable to jettison the tow dart.

3,623,727
TOW TARGET INCLUDING A CONTROLLABLE SOURCE OF HEAT RADIATION
Ephraim Regelson, Mariposa, and William S. Roney, Ridgecrest, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed July 1, 1969, Ser. No. 838,139
Int. Cl. F41j *5/08*
U.S. Cl. 273—105.3 2 Claims

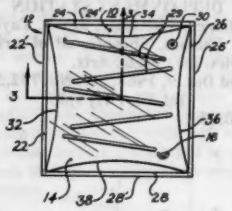
An aerial tow target consisting essentially of two

orthogonal triangular airframes has been augmented with a



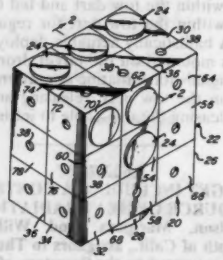
butane burner or the like to provide a target for radiation seeking missiles.

3,623,728
INFLATABLE PILLOW WITH GAME BOARD
A. Eddy Goldfarb, 19434 Londelius St., Northridge, Calif.
Filed Mar. 14, 1969, Ser. No. 807,177
Int. Cl. A63b 67/14
U.S. Cl. 273—109 14 Claims



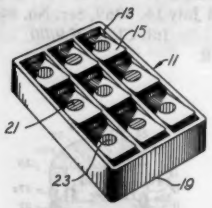
A play device in the form of a flexible envelope inflatable into a functional pillow and having at least a portion of its walls transparent. The envelope encloses a rigid game board and one or more play or game pieces which may be positioned or moved relative to the board by manipulating the inflated pillow to effect play of the game.

3,623,729
THREE-DIMENSIONAL BOARD GAME APPARATUS
Joseph J. Wetherell, New York, N.Y., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 26, 1970, Ser. No. 14,604
Int. Cl. A63f 3/00
U.S. Cl. 273—130 R 2 Claims



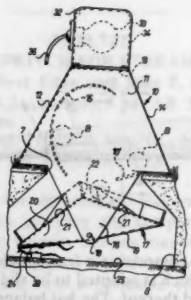
A game apparatus for playing a three-dimensional game with a plurality of game pieces. The game pieces are divided into a plurality of groups of similar number, each of the groups being a different color. Each game piece comprises a flat disc having a stem which extends transversely to one of the flat surfaces of the disc at the center thereof. The apparatus also includes a support member which is a rectangular, hollow, transparent member having five rectangular playing surfaces, four of which are disposed vertically and depend from the four edges of the periphery of the fifth of the surfaces which is horizontally disposed. Each of the surfaces includes a plurality of squares which are disposed in aligned rows and columns. The rows of each of the four vertically disposed surfaces are aligned with the rows of the other vertical surfaces. The columns of each of the four vertical surfaces are aligned with the rows and columns of the horizontal surface. Each of the squares has an opening at the center thereof so that any one of the discs may be removably secured to the square by insertion of the stem of the disc in the opening. The support member has a bore formed in its sixth surface, said bore rotatably receiving a projection carried by a base member.

3,623,730
CARD GAME AND METHOD OF PLAYING SAME
Adolph E. Goldfarb, 19434 Londelius St., Northridge, Calif., and Rene Soriano, Los Angeles, Calif., assignors to said Goldfarb, by said Soriano
Filed Aug. 11, 1969, Ser. No. 849,090
Int. Cl. A63f 3/02
U.S. Cl. 273—132 4 Claims



A card game and method of playing same which comprises two sets of playing cards, each set differentiating from the other by indicia thereon, and a tray having a plurality of individual compartments therein for containing the cards when distributed throughout the tray, allowing the cards to be readily removed from each compartment during the playing of the game. The game is played by selected moving of cards from compartment to compartment within the tray in a given number of moves to effect a result where only cards of one set are exposed to the players.

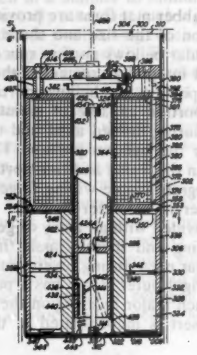
3,623,731
GOLF PUTTING GAME
Edgar Forcier, 4155 44th Avenue, Ville St. Michel, Quebec, Canada
Filed July 23, 1970, Ser. No. 57,686
Int. Cl. A63b 67/02, 69/36
U.S. Cl. 273—176 FA 8 Claims



A golf-putting game comprising an elongated playing surface with a teeing area at one end and a plurality of holes

disposed in at least two rows, one on each side of, and generally parallel to, the longitudinal centerline of the playing surface, such that the sight angle from the teeing area to the successive holes of any given row is progressively smaller with increasing distance of the holes from said teeing area, in combination, for each hole, with a score-indicating lamp actuated into an on-state upon passage of a first ball through the hole and into an off-state upon passage of a second ball through the hole, whereby the player upon playing the successive holes of a row, experiments increasing difficulty in so doing and runs the risk of cancelling his own score if he plays two balls into a given hole. A ball catcher, containing a deflector, is provided around each hole. The movement of a pivotable baffled ramp located in each hole closes and opens an electrical circuit to control the state of the indicating lamp. Golf balls are returned to the tee area by an inclined alley which cooperates with a discharge outlet in each hole.

3,623,732
GOLF PUTTING CUP WITH RANDOM-DIRECTION BALL EJECTION MEANS
Maurice E. Peeples, P.O. Box 235, Kingsland, Ga.
Continuation-in-part of application Ser. No. 699,229, Jan. 19, 1968, now abandoned. This application Dec. 15, 1969, Ser. No. 885,216
Int. Cl. A63b *57/00*
U.S. Cl. 273—179 A **25 Claims**

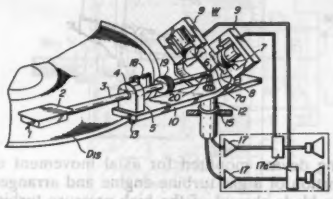


A golf ball putting hole which automatically ejects golf balls putted thereinto includes the following features: (1) an electromagnet powered by an annular arrangement of rechargeable batteries surrounding the golf ball ejecting armature and resting on the lower end wall of the hole (2) a coil spring secured to the lower end of the armature and supporting same above the lower end wall of the hole and (3) a detachable closure member secured to the upper end of the hole and supporting a flag pin.

3,623,733
GOLF PRACTICE APPARATUS
John J. Cavanaugh, 77 W. Washington St., Chicago, Ill.
Filed Nov. 13, 1969, Ser. No. 876,385
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 B **1 Claim**

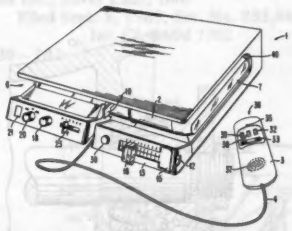
Apparatus for practicing swinging of a golf club which comprises a body cage member and a hitting track member to inculcate upon the user proper hip movement during the swing and movement of the golf club head in the proper path when contacting a golf ball. The body cage member is adjustable both vertically and laterally to accommodate a golder's hips. The track member is adjustable to different distances from the cage member to accommodate the different lengths of the various clubs. The track member's alignment is also adjustable to develop various golf club swings, e.g., an inside-out swing.

3,623,734
PICK-UP DEVICE FOR RECORD PLAYERS
Naraji Sakamoto, Toyonaka-shi, and Toshiyuki Goto, Kadoma-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Sept. 16, 1969, Ser. No. 858,357
Claims priority, application Japan, Sept. 21, 1968, 43/68616
Int. Cl. G11b *3/10*
U.S. Cl. 274—1 R **11 Claims**



A pickup device for record players which enables a stylus under a light pressure to perfectly trace the grooves on a disc even if the disc is warped or eccentric, whereby high-fidelity reproduction of the recorded sound can be obtained.

3,623,735
DICTATING AND TRANSCRIBING APPARATUS WITH AUTOMATIC AND SEMIAUTOMATIC OPERATOR-CONTROLLED FACILITIES
Chester M. Fackler; Fred W. Johnson, and Bruno F. Wehmer, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 19, 1968, Ser. No. 699,259
Int. Cl. G11b *27/10*
U.S. Cl. 274—4 J **16 Claims**



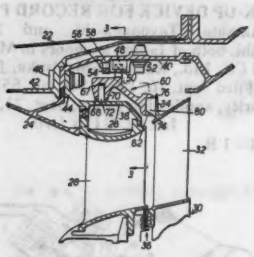
The invention concerns dictating and transcribing apparatus using a magnetic belt record media and having a variety of automatic and semiautomatic features. The dictating and transcribing units are arranged for loading and unloading of a magnetic belt and have an automatic phasing feature for establishing initial synchronism of the driving lead screw and the belt for accurate tracking of a signal transducer in relation to the belt during recording and transcribing operations Certain procedures are provided to insure compatibility of the units with different kinds of record media.

3,623,736

SEALING DEVICE

James A. Petrie, Littleover, and Willie Williamson, Shelton Lock, both of England, assignors to Rolls Royce Limited, Derby, England

Filed Sept. 16, 1969, Ser. No. 858,309
Claims priority, application Great Britain, Sept. 26, 1968, 45,753/68
Int. Cl. F16j 15/48
U.S. Cl. 277—27 5 Claims



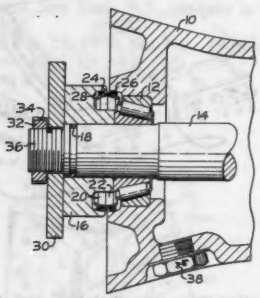
A sealing device mounted for axial movement on a stationary portion of a gas turbine engine and arranged to seal against the blade shroud of the high-pressure turbine of the engine. The sealing device is annular in form and has two lips defining an annular channel and a number of radial lands extending between the lips thereby defining a plurality of equispaced recesses. In operation the recesses in combination with the blade shroud form a number of chambers which are subjected to a variable pressure, the chambers being in communication with a source of high-pressure gas. If the clearance between the sealing device and the blade shroud decreases the pressure in the chambers increases and vice versa, the resultant pressure on the sealing device acting to maintain the clearance at a substantially constant value.

3,623,737

FACE SEALS

Edwin J. Eckert, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 29, 1969, Ser. No. 888,288
Int. Cl. F16j 15/34
U.S. Cl. 277—92 10 Claims



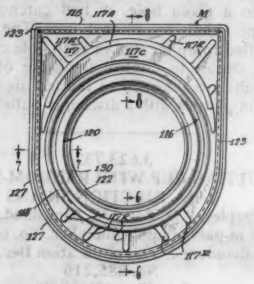
A formed, sheet-metal face seal is provided which utilizes loading means to bring seal faces of relatively rotatable parts into operative, fluidtight engagement. The seal comprises a frustoconical annulus having a generally radially extending flange joined to the larger diameter end, which flange defines a face for sealing against a relatively rotating surface.

3,623,738

REAR SEAL

Robert W. MacDonnell, Crete, Ill., assignor to Unity Railway Supply Co., Inc., Chicago, Ill.

Continuation-in-part of application Ser. No. 697,131, Jan. 11, 1968, now abandoned. This application Mar. 11, 1970, Ser. No. 18,605
Int. Cl. F16j 15/32
U.S. Cl. 277—132 4 Claims



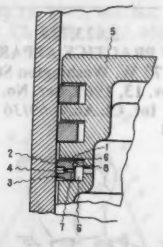
Dustguards of rubber mat form are provided having a rigid outer frame portion of the size and shape of the dustguard slot, having a circular bellows portion spaced from the outer frame portion and integrally connected thereto by a planar intermediate web portion, the bellows portion terminating in a semirigid ring portion capable of maintaining substantial circular stability during limited axial and transverse shifting accommodated by the bellows portion. The web is of less axial thickness than the frame and ring portions. The ring terminates in an integral flexible wiping finger of circular form and slightly smaller in diameter than the journal seat. The web portion is provided with an array of generally radial ribs that resist stretching and thereby assist in maintaining the ring portion circular even during severe transverse shifting of the journal. The rigid outer frame has a pair of seal fins extending around each major face region thereof. In one form, a metal frame insert is incorporated in the mat to impart desired rigidity.

3,623,739

OIL SCRAPER RING

Eisuke Sugahara, Tokyo, Japan, assignor to Nippon Piston Ring Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1969, Ser. No. 889,228
Claims priority, application Japan, Feb. 17, 1969, 44/11055
Int. Cl. F16j 9/20
U.S. Cl. 277—163 1 Claim



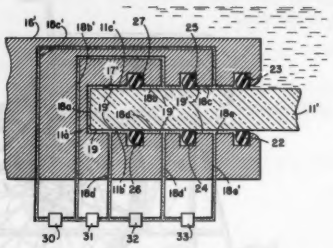
An oil scraper ring for the piston of an internal combustion engine which has two axially spaced outer, approximately cylindrical faces and an oil window radially therethrough between the faces is provided with an expander in an annular groove of the inner circumferential face radially approximately aligned with one of the outer faces which is axially wider than the other outer face for uniform pressure distribution between the two faces.

3,623,740

SEAL FOR A STEEL-GLASS JOINT

Edgar N. Rosenberg, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 24, 1970, Ser. No. 66,256
Int. Cl. F16j 15/14
U.S. Cl. 277—237 5 Claims



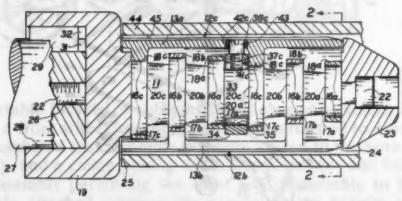
A cylindrical submersible housing is connected to a hemispherical glass shell in a manner to minimize failure-producing tensile forces usually attendant such a juncture. An annular channel provided in the housing receives a cylindrical extension of the hemispherical shell. The small space formed between the inner walls of the annular channel and the cylindrical extension is filled with oil, at least one pair of gland-"O"-ring combinations hydrostatically isolate the fluid from the interior and exterior of the submersible. The oil and gland-"O"-ring combinations cooperate to hold the cylindrical extension from contacting the inner walls of the annular channel to eliminate lateral, tensile forces otherwise produced when a brittle material, such as glass, is subjected to high bearing forces. Higher pressure compensation is provided by a plurality of pairs of gland-"O"-ring combinations forming adjacent liquid-filled annular spaces each in fluid communication with one of a plurality of pressure regulators setting the pressure differential between adjacent annular spaces below that at which failure occurs across a gland-"O"-ring combination.

3,623,741

BIDIRECTIONALLY OPERABLE TORQUE ACTUATED EXPANDABLE CORE CHUCK

George E. Reeder, Jr., Newark, Del., and Soma M. Rohosy, West Chester, Pa., assignors to Beloit Corporation, Beloit, Wis.

Filed Nov. 12, 1969, Ser. No. 875,984
Int. Cl. B23b 31/40
U.S. Cl. 279—1 DA 6 Claims



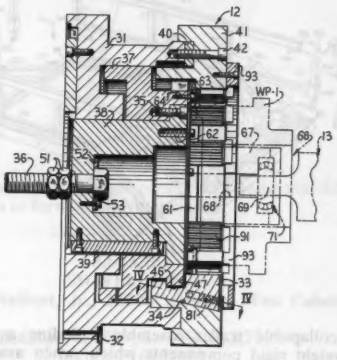
A plurality of elongate chucking members equiangularly disposed about a rotatable central camshaft provide a bidirectionally operable cylindrical core chuck which can be expanded radially by simultaneous outward movement of such members relative to the rotational axis of the camshaft. Each of the chucking members includes two spaced coaxial mounting yokes supported by corresponding circular cams located along the camshaft and offset from the rotational axis thereof A positioning ring concentric with the chuck axis is provided with radial guide pins which maintain the chucking members in equiangular relation to each other as they are moved outwardly in unison as a result of torque development between the camshaft and any one of the chucking members.

3,623,742

JAW CHUCK

Wilmer E. Funk, Roanoke; Howard M. Hilgers, East Peoria, and Eugene R. Martin, East Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 4, 1969, Ser. No. 855,287
Int. Cl. B23b 31/12
U.S. Cl. 279—65 11 Claims



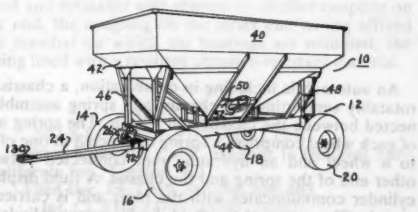
A chuck assembly for securing generally cylindrical workpieces which have rough surfaces or which are otherwise not uniform or concentric. A relatively large number of jaw members are arranged in respective register with ramp surfaces at circumferentially spaced locations about an interior bore of the chuck. A draw bar is associated with each of the jaw members by means of a ring member for positioning the jaw members and initially engaging them upon the workpiece. An actuator block is arranged for axial engagement with the workpiece and is associated with the ring member for further shifting the jaw members and increasing their engagement with the workpiece during operation.

3,623,743

TOWED VEHICLE TONGUE ASSIST STRUCTURE

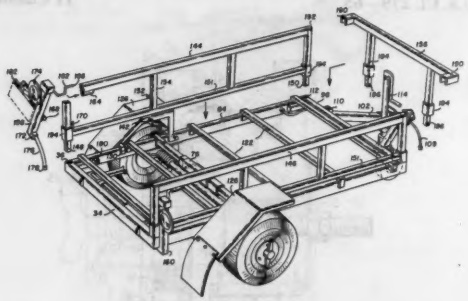
John D. Rohrer, North Manchester, Ind., assignor to Parker Industries Inc., Silver Lake, Ind.

Filed Sept. 8, 1969, Ser. No. 855,866
Int. Cl. B60d 1/00
U.S. Cl. 280—103 10 Claims



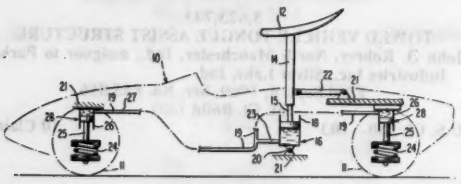
A tongue assist structure for a towed vehicle in which a tongue mounting fixture is pivotally secured to the front axle assembly of the vehicle and a tongue is pivoted horizontally to the fixture, and in which a leaf spring means is secured to the underside of the fixture and extends longitudinally along the underside of the tongue for urging the tongue in a substantially horizontal position.

3,623,744
COLLAPSIBLE TRAILER APPARATUS
Melvin C. Bertness, Santa Cruz, and Arnold E. Lyle, Capitola, both of Calif., assignors to Bermaco Enterprises, San Jose, Calif.
Filed Dec. 11, 1969, Ser. No. 884,240
Int. Cl. B62d 23/00
U.S. Cl. 280—106 12 Claims



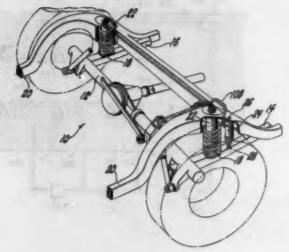
A collapsible trailer assembly including a plurality of lightweight rigid components which, when assembled in a predetermined order, interlock to form the superstructure of a trailer vehicle which can be fully assembled by a person of average strength and dexterity without the use of tools and without the use of bolts, screws or other ordinary fastening means.

3,623,745
LOAD LEVELER
Robert W. Taylor, P.O. Box 9355 Southern University, Baton Rouge, La.
Filed June 2, 1969, Ser. No. 829,581
Int. Cl. B60g 11/58
U.S. Cl. 280—124 5 Claims



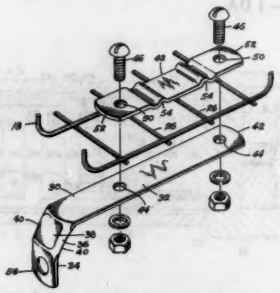
An automobile including in combination, a chassis, wheels rotatably supporting the chassis, and spring assemblies connected between the chassis and wheels. The spring assembly of each wheel comprises a spring connected at one of its ends to a wheel and an hydraulic ram connected between the other end of the spring and the chassis. A fluid displacement cylinder communicates with the rams and is carried by the chassis. The piston of the fluid displacement cylinder is connected to an air foil which creates a negative lift to apply a downward force on the piston which functions to add a simulated weight to the chassis and compress the springs of the wheel assemblies and to displace fluid from the fluid displacement cylinder to urge fluid to the rams to raise the chassis with respect to the springs. Thus, as the force exerted by the wing adds to the weight of the vehicle and causes contraction of the wheel springs, the chassis is maintained a predetermined distance from the ground by the rams.

3,623,746
SELF-PUMPING VEHICLE HEIGHT CONTROL ASSEMBLY
Michael E. Zielinski, Washington, D.C., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 23, 1970, Ser. No. 31,253
Int. Cl. B60g 17/04
U.S. Cl. 280—124 5 Claims



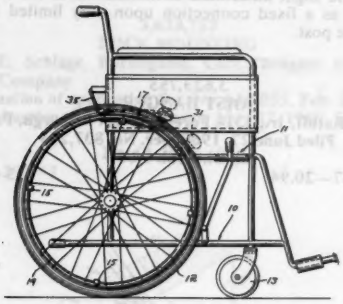
A pump assembly including a piston attached to the vehicle unsprung mass for reciprocal movement within a cylinder secured to the sprung mass supplies pressure fluid to suspension lift units. Downward movement of the piston draws fluid into the pump assembly from a reservoir and upward movement of the piston compresses the fluid for discharge through a pressure port to the lift units. A pressure relieve valve is provided for dumping the fluid to the reservoir when the lift units are sufficiently pressurized. The pump assembly further includes a balanced control valve operative to bypass fluid from the pressurized lift units back to the reservoir when the vehicle is lightly loaded and blocks flow from the lift to the reservoir when the vehicle is heavily loaded. The balanced valve is biased closed with a spring force varying with movement of the pump piston.

3,623,747
AXLE BRACKET FOR SADDLE BASKET
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Incorporated, Maysville, Ky.
Filed Nov. 10, 1969, Ser. No. 875,432
Int. Cl. B62j 9/00
U.S. Cl. 280—202 7 Claims



The saddle basket mounting means includes an axle-supported rigid bracket on which a clamp plate member is mounted, said clamp plate member being grooved and designed to impose two different forms of clamping action upon the bottom wires of the basket, thereby ensuring a tight, motionless, noiseless mount for the basket.

3,623,748
OCCUPANT ACTUATED MEANS FOR PROPELLING A WHEELCHAIR
Dewey O. Haynes, 16 Cushman Road, Brighton, Mass.
Filed Sept. 16, 1969, Ser. No. 858,415
Int. Cl. B62m 1/14
U.S. Cl. 280—242 10 Claims



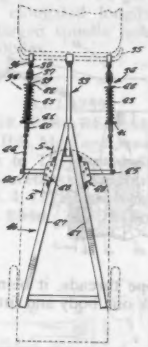
A wheelchair is disclosed that has a dual rim unit attached to each of its main wheels, each unit slidably supporting a device provided with a friction member engageable with the unit and a handgrip for effecting such engagement, the device being attached to the chair to limit its sliding movement relative to the unit.

3,623,749
PORTABLE BICYCLE
Falle R. Jensen, 44 W. Del Amo Blvd., Long Beach, Calif.
Filed Dec. 29, 1969, Ser. No. 888,347
Int. Cl. B62k 15/00
U.S. Cl. 280—278 6 Claims

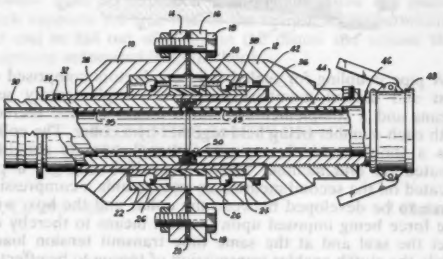
A portable bicycle of substantially U-shaped structure including a front wheel assembly removably attached to a bottom assembly, a seat assembly pivotally affixed to the bottom assembly, and a clamp joining the bottom assembly and front wheel assembly permitting the front wheel assembly to be removably attached substantially parallel to the bottom assembly.

3,623,750
TRAILER HITCH, NO SWAY TRAILER HITCH
David M. Allen, Rte 1, Box 37, Bremen, Ky.
Filed Aug. 4, 1969, Ser. No. 847,204
Int. Cl. B60d 7/00
U.S. Cl. 280—446 B 2 Claims

A trailer hitch having a three-point connection between a towing and towed vehicle, and which comprises spring-stretchable connections on opposite sides and a nonstretchable center connection; the side connections being attached at their rear ends to forwardly pivotable bars.



3,623,751
SWIVEL JOINT
Clarence E. Hulbert, Jr., 1810 Columbia, West Columbia, Tex.
Filed Apr. 4, 1969, Ser. No. 863,725
Int. Cl. F16l 27/00
U.S. Cl. 285—55 1 Claim

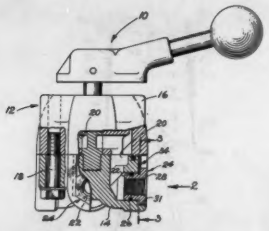


A swivel joint particularly useful in a conduit for conveying abrasive materials, the joint comprising a housing having a pair of longitudinally spaced-apart radial thrust bearings mounted therein, the housing being rotatable with a coupling on one end and rotatable with respect to another coupling on the other end, the coupling on the other end having affixed thereto a mandrel on which the bearings are mounted, the whole being lined with a resilient abrasive-resistant material.

3,623,752
SELF-LOCKING PIPE ADAPTER
James O. Brown, Fullerton, Calif., assignor to DeLaval Turbine California Inc., Trenton, N.J.
Filed Dec. 19, 1969, Ser. No. 886,465
Int. Cl. F16l 21/08, 25/00, 29/00
U.S. Cl. 285—91 1 Claim

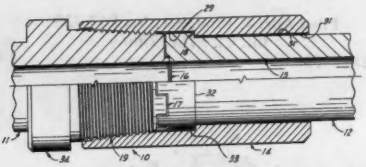
An internally threaded adapter fitting for connecting a pipe, or the like, to a body to place the pipe in fluid communication with a passage in the body. The fitting is disposed in bore terminating in the fluid passage. The fitting is held against axial movement in the bore and is also held against rotation in the bore so that a pipe can be threaded into the fitting, or unscrewed therefrom. With this construction, fittings have different internal threads can be secured in the

bore to accommodate different pipe threads. Consequently, it is not necessary to manufacture and stock bodies threaded



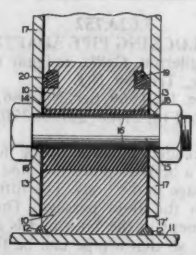
to match different pipe threads, it being necessary only to manufacture and stock one body and fittings having different threads.

3,623,753
PIPE COUPLING FOR A SEALED FLUID CONDUCTOR
Ralph L. Henry, Midland, Tex., assignor to Smith International, Inc., Midland, Mich.
Filed Dec. 8, 1969, Ser. No. 883,008
Int. Cl. F16l 19/00
U.S. Cl. 285—330 **5 Claims**



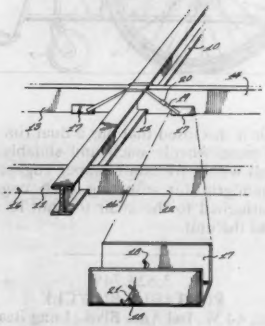
A pipe coupling for sealed fluid conductors comprised of first and second members having a complementary seal means and a complementary clutch means formed thereon with each member being held together by a collar. The collar has a shoulder which engages a complementary shoulder located on one member and a box which engages a pin located on the second member so as to enable a compressive force to be developed between the collar and the box, with the force being imposed upon the seal means to thereby effect the seal and at the same time transmit tension loads, while the clutch enables transmission of torque to be effected in either rotational direction.

3,623,754
CUSHIONING MOUNTING ASSEMBLY FOR VEHICLE GUARD CANOPY POST
James C. Moore, Clackamas, Oreg., assignor to Portland Wire & Iron Company, Portland, Oreg.
Filed Nov. 4, 1970, Ser. No. 86,817
Int. Cl. F16b 9/00
U.S. Cl. 287—20 **3 Claims**



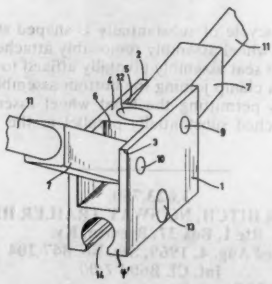
A solid base member, rigidly secured on the vehicle, extends up, with slight all around clearance, into the bottom end of the tubular post for the canopy. A cross slot through the base member contains a cushioning mounting for a bolt which in turn supports the post. The cross slot and cushioning mounting are so shaped as to allow limited upward and sideward travel of the bolt and post relatively with respect to the base member but considerable cushioned travel relatively downwardly. A special resilient ring, secured at the top of the base member, engages the inside of the post and normally prevents metal-to-metal contact between base member and post, but the slight all around clearance makes the resilient mount act as a fixed connection upon very limited lateral swing of the post.

3,623,755
JOIST HANGER
George D. Ratliff, Jr., 2314 Forest Drive, Pittsburgh, Pa.
Filed June 27, 1969, Ser. No. 837,263
Int. Cl. F16b 9/00
U.S. Cl. 287—20.94 **5 Claims**



An improved joist hanger for supporting steel, wooden or other joists from beams, such as I-beams, wherein a separate bracket is attached at a distance from the beam to each of a pair of conventional joists abutting opposite sides of a conventional girder or beam, and a strap with its ends fastened together links the two brackets over the beam so that both joists are supported vertically by the beam and continually pulled toward it to improve the load distribution of the joists as well as to generally improve the support characteristics of a floor or other structure comprised of such joists and beams.

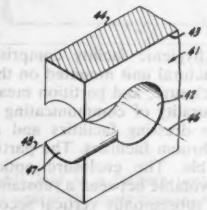
3,623,756
ASSEMBLY KIT WITH SOCKET MEMBER
Artur Fischer, Altheimer Str. 219, D-7241 Tumlingen, Germany
Filed June 17, 1969, Ser. No. 833,943
Claims priority, application Germany, July 6, 1968, P 17 84 104.2, July 17, 1968, Germany, P 17 75 221.5
Int. Cl. F16c 11/00
U.S. Cl. 287—92 **7 Claims**



A plurality of bar-shaped structural elements are provided in an assembly kit. A socket member serves for connecting at

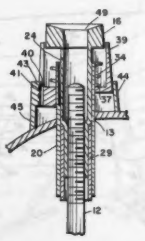
least two of these structural elements to one another and comprises first and second connecting means each of which is operative for releasably engaging an end portion of one of the structural elements and connecting the same to the socket member. At least one of the connecting means enables movement of the associated structural element relative to the socket member in a predetermined direction and plane.

3,623,757
LOCK MOUNTING
Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company
Continuation of application Ser. No. 618,055, Feb. 23, 1967, now abandoned. This application May 22, 1969, Ser. No. 828,437
Int. Cl. E05c *19/00*
U.S. Cl. 292—1 **3 Claims**



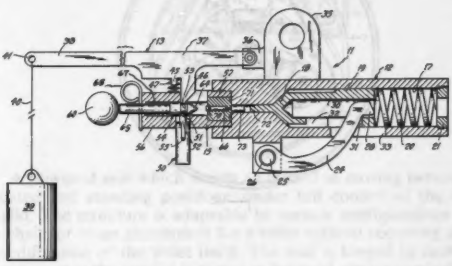
A socket to receive a lock unit is provided in a door stile or panel and is bounded by opposing surfaces of revolution defined by a right line generatrix moving parallel to and centered on an axis itself parallel to the side surfaces of the door panel, the curved surfaces merging with the edge surface of the door panel and having a great enough radius to break through at least one side surface of the door panel.

3,623,758
SAFETY KIT ASSEMBLY FOR AUTOMOBILE DOOR LOCKS
Frederick Trinca, 6412 83rd St., Middle Village, N.Y.
Filed Nov. 9, 1970, Ser. No. 87,740
Int. Cl. E05b *1/00*
U.S. Cl. 292—347 **5 Claims**



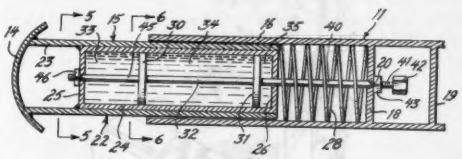
Kit members used to replace and convert conventional push-pull automobile door latches with operating vertical reciprocatable spindle means against internal accidental release or external unauthorized release. The conventional latch knob is first removed, thereby exposing the threaded end of the spindle at the usual opening formed in the door sill for connection with the kit members. The kit comprises a guide sleeve, a latch knob with a hollow shank with bifurcated end portions to thread on the exposed end of the spindle, shroud means around the latch knob with an opening to permit under knob engagement by suitable means, and a highly flexible grommet coupled with the shroud around the latch knob conformable to the exterior top surface of the door sill. The guide sleeve being snapped into place in response to downward pressure exerted on a split ring tool member against the bias of a tension spring and discarded prior to connection of the latch knob on the spindle with the coupled shroud and grommet. The guide sleeve having an adapter sleeve with elongated longitudinal slots carried thereby when an enlarged spindle hole is encountered in some makes of automobiles.

3,623,759
OCEANOGRAPHIC RELEASE HOOK
Seymour Adler, Oxon Hill, Md., and Jason H. Taylor, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy
Filed Mar. 4, 1970, Ser. No. 16,449
Int. Cl. B64d *17/38*; B66c *1/36*
U.S. Cl. 294—83 AE **7 Claims**



A direct-action release means primarily for use with free-fall-type ocean bottom corers which includes a spring-loaded, cartridge-actuated piston that supports the load and frees a hook when a trip weight reaches the bottom is disclosed. Pressure from an exploded cartridge displaces the piston which supports the free end of the release hook, permitting that end to fall out of a slot in the piston and release the equipment suspended from the hook.

3,623,760
AUTOMOTIVE SAFETY DEVICE
Richard E. Beswick, Box 294 Mae Ave., Pemberton, N.J.
Filed Feb. 26, 1970, Ser. No. 14,409
Int. Cl. B60r *19/08*
U.S. Cl. 293—86 **7 Claims**



A shock-absorbing construction for vehicles including the combination of both fluid shock-absorbing means and resilient mechanical shock-absorbing means.

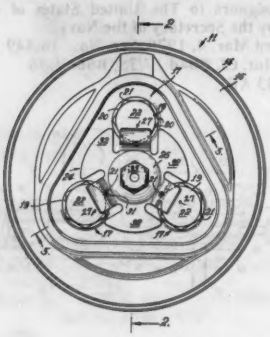
ERRATUM

For Class 294—83 AE see:
Patent No. 3,623,759

3,623,761
LOCKING PLATE FOR CAPSCREWS HOLDING ROLLER BEARING END CAP TO THE OUTER END OF AN AXLE JOURNAL
Rudolph E. Nadherny, Naperville, Ill., assignor to Illinois Railway Equipment Company, Chicago, Ill.
Filed July 1, 1970, Ser. No. 51,646
Int. Cl. B62d *27/00*
U.S. Cl. 295—36 R **20 Claims**

A spring steel centrally bowed and apertured locking plate has three radially extending arms for locking engagement

with the hexagonal heads of three equiangularly spaced capscrews securing an end cap of a roller bearing to the outer end of a railway car axle journal. The locking plate is held in place by a grease fitting extending through the aperture and threaded into the end cap. In one embodiment the arms are arranged to bear against the flat sides of the heads of the capscrews and to overlie them with radially extending wedge-shaped leaves therebetween for locating the locking plate



with respect to these heads. In another embodiment the arms are wedge shaped with their radial edges upturned to bear against the flat sides of the heads of the juxtaposed pair of capscrews. The upturned edges are serrated for locking engagement with corners of the hexagonal heads and a tab extends from the central section to lock the grease fitting. In a further embodiment short arms intermediate the radial arms also lock the capscrews.

3,623,762

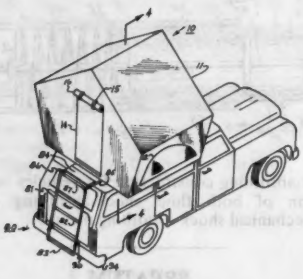
PENTHOUSE CAR CAMPER

James D. Fagan, 631 Deerwood St., Columbia, S.C.

Filed June 11, 1970, Ser. No. 45,395

Int. Cl. B60p *3/34*

U.S. Cl. 296—23 **6 Claims**



A collapsible tent camper detachably mounted on the roof of an automobile comprising a main platform, foldable mattress platforms along opposing sides of the main platform, and a flexible tent cover overlying all of said platforms in their open position and supported thereover by a superstructure and collapsible frame of novel design. Integrally mounted on the superstructure is a collapsible table which in its collapsed position cooperates with the folded side platforms to form a storage compartment for transporting camping equipment. Provision is also made for a permanently installed ladder pivotally connected to the rear of the main camper platform.

3,623,763

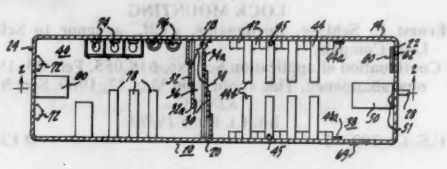
TRANSPORTABLE HYGIENIC FACILITY

David Francis Boyd, Sr., Schenectady, and Clyde Edward Cole, Delmar, both of N.Y., assignors to Boycol Incorporated, Albany, N.Y.

Filed Jan. 16, 1970, Ser. No. 3,322

Int. Cl. B60p *3/32*

U.S. Cl. 296—23 **7 Claims**



A transportable hygienic facility comprising a wheeled frame means, a structural unit mounted on the frame means and defining an enclosure, and partition means dividing the enclosure into a plurality of communicating rooms. One of the rooms contains dressing facilities and another of the rooms contains bathroom facilities. The partition means are preferably retractable. The enclosure optionally contains panels which are pivotable between a substantially horizontal first position and a substantially vertical second position adjacent to a wall of the structural unit. Some panels can be used in the second position for providing graphic representation and other panels in a like position can be used as a picture screen, which panels can be used in the first position as, inter alia, athletic tables.

3,623,764

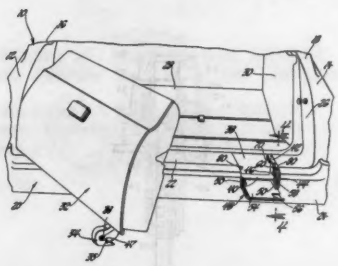
CLOSURE INSTALLATION

John L. Jacobus, Roseville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 13, 1970, Ser. No. 36,948

Int. Cl. B60j *5/10*

U.S. Cl. 296—50 **3 Claims**



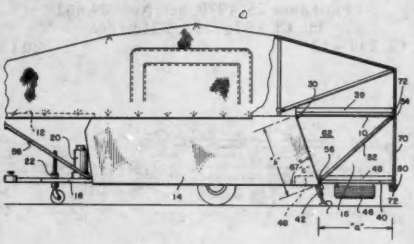
A closure installation for a step recess in a bumper structure on a vehicle body, the latter including an access opening and a primary closure or tailgate swingable relative to the opening between a closed position wherein a hinge-latch support structure portion of the tailgate projects into the bumper structure recess and respective ones of two open positions as a door or as a drop gate, the closure installation including a secondary closure on the bumper structure movable between open and closed positions relative to the recess in the latter, link means between the bumper structure and the secondary closure and a control pin on the support structure operable to activate the link means to close the secondary closure behind the tailgate when the latter is moved to the closed position from either open position and to open the secondary clo-

sure in advance of the tailgate when the latter is moved from the closed to either of the open positions.

3,623,765
FOLDING TENT CAMPING TRAILER

Duane C. Bowen, 103 Insurance Bldg., 208 N. Market, Wichita, Kans.

Filed Dec. 15, 1969, Ser. No. 884,843
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 20 Claims

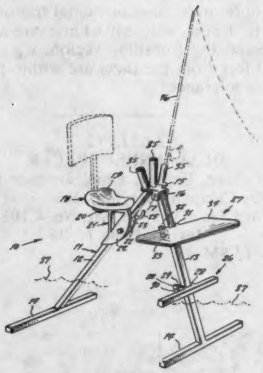


An extra double bed in a folding tent camping trailer is suspended under one of the beds cantilevered from the top of the boxlike trailer body. The external paneling supporting the mattress of the extra lower bed is formed at least partly from the paneling of the adjacent trailer wall, which is hinged down. The tent shelter has fabric flaps depending from around the upper bed and forming all or part of the walls of the lower bunk.

3,623,766
PORTABLE FISHING CHAIR

Joseph G. Funk, General Delivery, Ewing, Nebr.

Filed Oct. 1, 1970, Ser. No. 77,181
Int. Cl. A47c *7/62*
U.S. Cl. 297—188 7 Claims

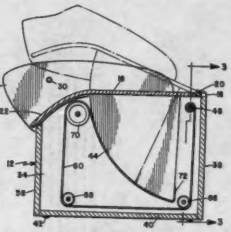


A convenient chair for use by a fisherman while fishing in wading waters so that the fisherman may rest his feet, the device comprising a frame of generally A-shaped configuration and comprised of a pair of legs pivotable so to spread apart the lower ends thereof, one of the legs supporting an adjustable seat, the other leg supporting an adjustable footrest and an adjustable tray, the apex of the frame including several holders into which the handle end of the fishing rod may be inserted so to free the fisherman's hands.

3,623,767
INVALID LIFTING SEAT

Gordon L. Condon, La Mesa, Calif., assignor to Invalift Incorporated

Filed Aug. 22, 1969, Ser. No. 852,429
Int. Cl. A47c *1/00*
U.S. Cl. 297—330 1 Claim



A powered seat which assists an invalid in moving between seated and standing positions, under full control of the invalid. The structure is adaptable to various configurations of a chair, or to an attachment for a toilet without requiring any modification of the toilet itself. The seat is hinged in such a manner that the invalid is raised or lowered almost vertically, with no danger of sliding off the seat.

3,623,768
VEHICULAR SAFETY SEAT

Erwin L. Capener, San Jose, and Julius Roth, Portola Valley, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Aug. 5, 1970, Ser. No. 61,273
Int. Cl. A62b *35/60*
U.S. Cl. 297—390 4 Claims

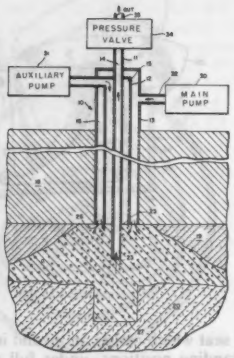
A vehicular safety seat having a seat portion, a backrest provided with a pair of movably mounted arms having forward portions which, on severe vehicular impact, are driven inwardly under pressure of released gases to a body-restraining position adjacent the torso of an occupant of the seat and immediately over his thighs, at least one of said arms carrying adjacent the forward end thereof a folded air bag which is simultaneously inflated by said gases to provide a protective pillow between the chin and the thighs of the occupant which does not obstruct his vision. The pillow deflates and the arms are retracted to a nonprotective position immediately upon cessation of the impact, thereby affording unrestricted movement on the part of the seat occupant.

3,623,769

METHOD AND APPARATUS FOR SOLUTION MINING

Robert Lee James, Winnetka, and William Lawrence Donovan, Palatine, both of Ill., assignors to Armour & Company, Chicago, Ill.

Filed June 29, 1970, Ser. No. 50,373
Int. Cl. E21b 43/28
U.S. Cl. 299—5 12 Claims



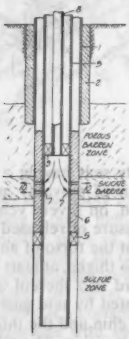
A system for solution mining of minerals with heated solvent includes a single-bore hole provided with a string of pipe having a central conduit, an intermediate annular conduit surrounding the central conduit and an outer annular conduit enclosed by a casing. Prior to production recovery of the mineral, both the outer annular conduit and the intermediate annular conduit may be used for undercutting the mineral cavity if desired by pumping water through both conduits while recovering through the central conduit. The change from the undercutting to the production stage may be accomplished without loss of well pressure by pumping an oil-water-clay composition, herein sometimes referred to as a gel, an oil-water-clay gel, or an oil gel having a density less than that of water into the intermediate conduit without capping its bottom orifice to thereby thermally insulate the central conduit from the outer conduit. In production, heated water is pumped down the outer annulus and the chilled solution is recovered from the central conduit.

3,623,770

METHOD TO IMPROVE PRODUCTION OF SULFUR

Hugh J. Ayres, Duncan; Ronney R. Koch, Duncan, Okla., and John G. Cook, New Orleans, La., assignors to Halliburton Company, Duncan, Okla.

Filed May 21, 1969, Ser. No. 826,532
Int. Cl. E21c 41/14
U.S. Cl. 299—6 20 Claims



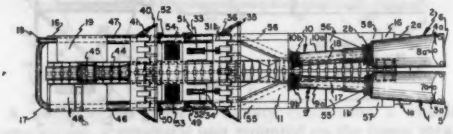
A method of mining sulfur in a subterranean formation containing a sulfur-bearing zone and a porous zone adjacent said sulfur-bearing zone comprising introducing a silicate solution into the porous zone and allowing the solution to set into a relatively firm and impermeable mass and then contacting the sulfur-bearing zone with a heated fluid whereby said impermeable mass prevents loss of heated fluid into said porous zone.

3,623,771

DRILL-AND-BLAST EXCAVATING APPARATUS AND METHOD

Edward J. Sosnowicz, Colwyn, Pa., and Frank M. Willis, Sewell, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 25, 1970, Ser. No. 49,662
Int. Cl. E01g 3/02; E21c 37/00
U.S. Cl. 299—12 20 Claims



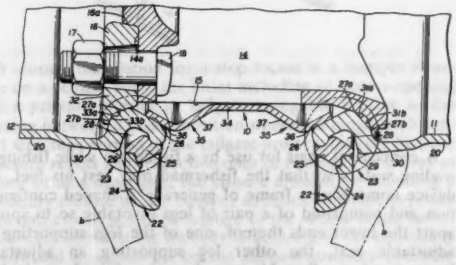
Drill-and-blast excavating apparatus has a powered carriage having a forward end which confronts a face in a geological formation; supporting arm members pivotally mounted on the carriage; drill-and-blast modules pivotally and rotatably mounted on the supporting arm members, the modules being adapted to drill holes in the face, load the holes with charges of condensed secondary explosive, and thereafter deliver energy to the charges in the holes to initiate the charges; explosives supply and feeding means communicating with the modules; a ventilating unit; at least one pair of gathering arms and a conveyor associated therewith mounted on the lower, chassis portion of the carriage; and protective shielding means including one or more transverse barriers mounted on the carriage behind the supporting arm members and drill-and-blast modules and forward of the explosives supply means, and adapted intermittently to engage the surrounding surfaces of an underground opening as a seal to effect pressure and noise attenuation. A process comprising performing substantially concurrent groups of drill-load-blast sequences in substantially continuous succession while removing muck and airborne fumes, and attenuating blast pressure and noise in an environmental transition region behind the face to the extent that blast pressure and noise levels in a zone behind the transition region, e.g., a zone up to about 50–100 feet from the face, are within prescribed safe limits of human tolerance.

3,623,772

DUAL WHEEL SPACER

William D. Walther, Dayton, Ohio, assignor to The Dayton Steel Foundry Company, Dayton, Ohio

Filed Jan. 21, 1970, Ser. No. 4,705
Int. Cl. B60b 1/06
U.S. Cl. 301—13 SM 6 Claims



Spacer for use in mounting dual tires on a truck wheel. Spacer is axially deformable having side portions or wings

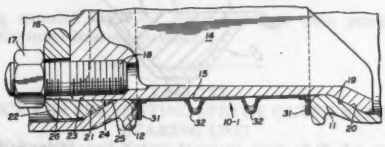
which are radially deflectable yet will positively maintain clearance between the tires.

3,623,773

DUAL WHEEL SPACERS

William D. Walther, Dayton, Ohio, assignor to The Dayton Steel Foundry Company, Dayton, Ohio

Filed July 2, 1969, Ser. No. 838,447
Int. Cl. B60b *1/06*
U.S. Cl. 301—13 R 3 Claims



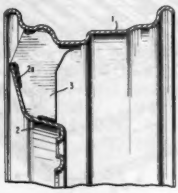
Spacer for use in mounting dual tires on a truck wheel. Spacer has a circumferentially extending medial portion which is transversely compressible yet will positively maintain clearance between the tires.

3,623,774

WHEEL, ESPECIALLY FOR MOTOR VEHICLES

Gunter Funke, Deufringen (Wurtt), and Manfred H. Burckhardt, Waiblingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed May 16, 1969, Ser. No. 825,159
Claims priority, application Germany, May 18, 1968, P 17 55 523.6
Int. Cl. B60b *1/10*
U.S. Cl. 301—64 R 4 Claims



A wheel, especially for motor vehicles, in which the wheel dish is connected with the wheel rim by connecting ribs constructed as blades in such a manner that upon rotation of the wheel, when driving in the normal forward direction, air is supplied from the inside toward the outside of the wheel.

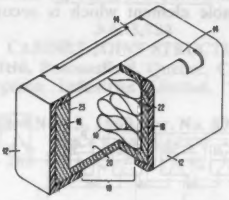
3,623,775

LOADING AND UNLOADING AN ENDLESS WEB IN A CARTRIDGE

Paul J. Arseneault, Longmont; Louis B. Feierabend, Boulder; William R. Golz, Longmont; Otto R. Luhrs, Boulder, and James T. Smith, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,109
Int. Cl. B65g *53/00*
U.S. Cl. 302—2 9 Claims

Two cartridges are shown herein which have the capability of storing a folded endless loop of tape. The cartridges are designed so that by pneumatic pressure the loop of tape may be unloaded from the cartridge by a controlled unfolding and reloaded into the cartridge by a controlled folding. Two cartridges are shown, one containing a porous wall to permit the appropriate air flow to control the folding and unfolding, and



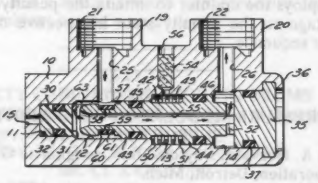
the other containing air passages in nonporous walls to control the folding and unfolding.

3,623,776

BRAKE PRESSURE PROPORTIONING VALVE

Ellis M. Wellman, Erie, Pa., assignor to The Weatherhead Company

Continuation of application Ser. No. 813,820, Apr. 7, 1969, now abandoned. This application Nov. 27, 1970, Ser. No. 93,155
Int. Cl. B60t *11/34, 8/26*
U.S. Cl. 303—6 C 7 Claims



A brake pressure proportioning valve includes an internal bore and a differential area piston slidably mounted within the bore. Under low-pressure conditions, fluid communication is established between the inlet and outlet pressures. When the inlet and outlet pressure increase, the piston moves against the biasing force of a spring to a displaced position to tend to cause the end of the internal bore to seat against a plug to isolate the inlet pressure from the outlet pressure. Any further increase in the inlet pressure increases the outlet pressure only a fractional amount of the inlet pressure increase due to the differential area piston. A ring-type check valve prevents the piston from being hydraulically locked in its displaced position.

3,623,777

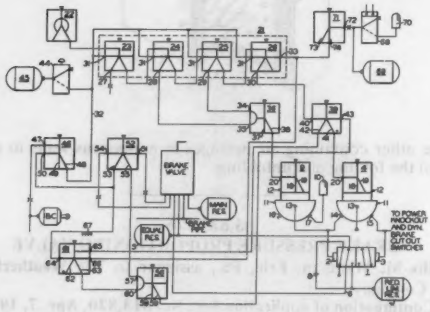
FLUIDIC BRAKE CONTROL SYSTEM HAVING SAFETY AND OVERSPEED CONTROL MEANS FOR RAILROAD TRAINS

Ronald A. Sarbach, Columbus, Ohio, and Shantilal N. Shah, Pittsburgh, Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Nov. 12, 1969, Ser. No. 875,805
Int. Cl. B60t *7/14, 13/66*
U.S. Cl. 303—19 13 Claims

A fluidic brake control system for a railway train interlocked with the conventional airbrake control system in which both "safety" and "overspeed" control of a bistable element is provided to control interface devices capable of effecting either a release of the train brakes or producing a penalty brake application. A safety control circuit employs a multistage binary counter to provide timing and sequencing whereby the operator is required to periodically acknowledge a counter controlled warning signal by resetting the counter to prevent occurrence of the impending penalty which is imposed by reason of the counter proceeding to its final stage.

In the event the counter reaches its final stage due to the warning signal not being acknowledged in the prescribed manner, the bistable element is triggered to initiate and latch in the penalty until conditions of a logic circuit are satisfied to reset the bistable element which is accordingly conditioned to effect a release of the brakes. The overspeed control circuit employs timing means separate from the counter but employs the counter to initiate the penalty by setting its final stage to the penalty state irrespective of the normal counter sequence.



3,623,778

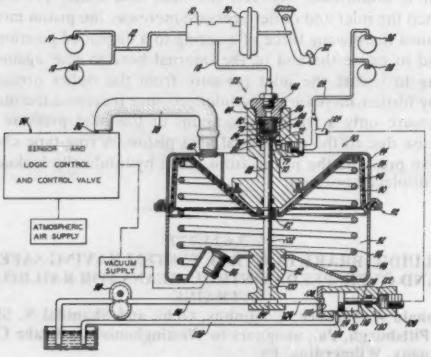
PRESSURE MODULATOR WITH ADDITIONAL SUPPORT PRESSURE

Robert A. Horvath, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 18, 1969, Ser. No. 877,609

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 F **6 Claims**



A brake apply pressure modulator in a vehicle wheel brake antilock system which receives signals from an antilock sensor and signal generator and acts to limit, decrease, and permit increase of the brake apply pressure in accordance with the antilock signals. Additional support pressure is provided in accordance with the brake apply pressure existing so as to prevent the modulator from functioning as a brake apply pressure limiter when the vehicle is being braked at high brake pressures without requiring the antilock functions to be operative.

3,623,779

ENDLESS-CHAIN TRACKS FOR VEHICLES, SUCH AS SNOW REMOVAL VEHICLES AND THE LIKE

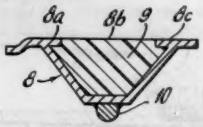
Alfred Schmidt, Jr., St. Blasien, Germany, assignor to Firma Ing. Alfred Schmidt, St. Blasien, Germany

Filed Nov. 13, 1969, Ser. No. 876,314

Claims priority, application Germany, Nov. 14, 1968, P 18 08 902.6

Int. Cl. B62d *55/26*

U.S. Cl. 305—13 **8 Claims**



The chain members of the endless-chain track comprise a baseplate which in the area of the snow accumulation and lump formation is provided with an opening covered by a hollow cleat. The cleat and the opening are filled with an adhesion-inhibiting material, such as rubber, plastics, and the like. The uppermost portion of the casing may support a projecting piece for improving the adhesion of the track to ground.

3,623,780

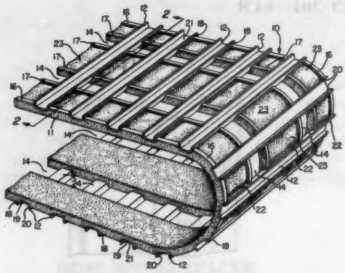
BELT TRACK

Ralph W. Kell, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 10, 1969, Ser. No. 883,716

Int. Cl. B62d *55/24*

U.S. Cl. 305—38 **11 Claims**



An endless vulcanized belt track for track vehicles, such as snowmobiles, having a body of elastomeric material and a plurality of spaced rigid elongated traction elements extending generally transversely of the belt track. The traction elements are secured onto the body to form an integral structure with a substantial projecting portion available to provide ground contact. The integral traction structure eliminates the need for attaching elements such as bolts or rivets.

3,623,781

BEARING ASSEMBLY AND METHOD OF MAKING SAME

William J. Roos, New London, N.H., assignor to MPB Corporation

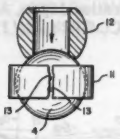
Original application Mar. 15, 1968, Ser. No. 713,443, now Patent No. 3,449,201, dated Mar. 10, 1970. Divided and this application Sept. 18, 1969, Ser. No. 870,993

Int. Cl. F16c *23/04*

U.S. Cl. 308—72 **4 Claims**

A bearing assembly having an inner bearing member with an outer spherical bearing surface and an outer race of

plastic material wherein said race is molded about a spherical-shaped die having a diameter at least as large as the inner

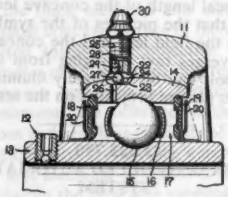


bearing member, split or fractured, and then positioned about the inner bearing member.

3,623,782
DEVICE FOR PREVENTING SPIN OF OUTER RACE IN BEARING UNIT

Tokio Nakanishi, and Tetsuo Hayashi, both of Osaka, Japan, assignors to Toyo Bearing Manufacturing Company Limited, Osaka-shi, Japan

Filed Mar. 30, 1970, Ser. No. 23,719
Int. Cl. F16c *1/24*
U.S. Cl. 308—187 **4 Claims**

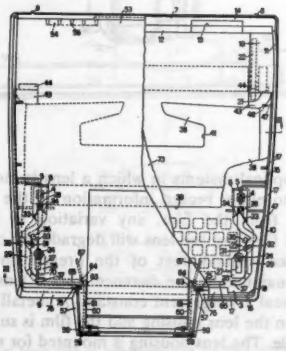


A device for preventing the spin of the outer ring relative to the housing in a bearing unit adapted to make a spherical fit so as to be capable of self-alignment.

3,623,783
COVER AND CARRYING CASE FOR A PORTABLE TYPEWRITER

Reginald R. Gallant, Bristol, Conn., assignor to Ing. C. Olivetti and C., S.p.A., Ivrea, Italy

Filed Feb. 24, 1970, Ser. No. 13,567
Int. Cl. A47b *21/00*
U.S. Cl. 312—208 **5 Claims**

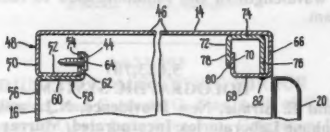


The base of the cover of a portable typewriter forms a part of the carrying case. The outer shell is another part of the carrying case and is provided with a rigid handle having two depressible keys to disengage the shell from the base. The inner shroud is a part of the machine cover and is latched to the base through a pair of levers operable through the aperture of the keyboard on the inner shroud.

3,623,784
CABINET JOINT STRUCTURE

John W. Neufeld, Beaconsfield, Quebec, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada

Filed Nov. 5, 1969, Ser. No. 874,188
Int. Cl. A47b *43/00*
U.S. Cl. 312—263 **5 Claims**

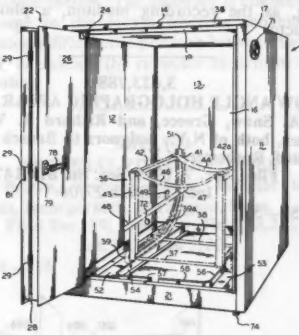


A metal cabinet comprises a plurality of intersecting panels are which joined together without spot-welds and without exposed raw metal edges by providing the panels with internesting flanges that are internally interconnected by metal screws to provide a smooth exterior surface having a single seam. One of the panels may have an interior wall which terminates in a flange that abuts the other panel wall to provide additional rigidity and a similar smooth joint structure on the interior of the cabinet having a single seam.

3,623,785
SAFETY CABINET FOR STORING DRUMS

Clarence E. Williams, Chicago, Ill., assignor to Justrite Mfg. Co., Chicago, Ill.

Filed July 25, 1969, Ser. No. 844,844
Int. Cl. A47b *81/00*
U.S. Cl. 312—307 **10 Claims**



A cabinet for storing drums. The cabinet is equipped with tracks and stoppers making it possible to handle the drums on a cradle in the cabinet. The cabinet is safety fused to automatically cause its door to close under inclemently hot ambient conditions.

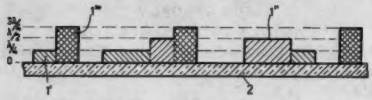
3,623,786
SYNTHETIC PHASE HOLOGRAM

Hans Dammann, Schonberg Rauhbank, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 5, 1970, Ser. No. 747
Claims priority, application Germany, Jan. 4, 1969, P 19 00 344.2
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **6 Claims**

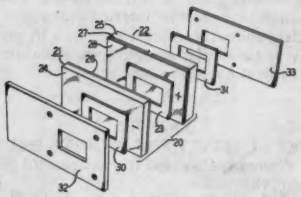
A synthetic hologram made up of groups of rectangular elements each group extending a different distance above a

substrate, where the distances of the groups of elements above the substrate are equal to interval multiples of one-



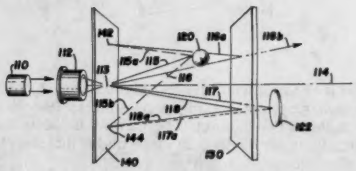
fourth wavelength of the radiation used to reconstruct the hologram.

3,623,787
HOLOGRAPHIC SYSTEM
Raymond E. Straile, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 30, 1969, Ser. No. 795,165
Int. Cl. G02b 27/22
U.S. Cl. 350—3.5 1 Claim



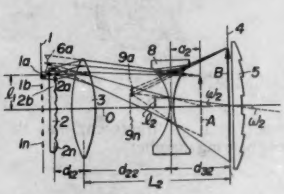
The specification describes a holographic recording system employing, as the recording medium, a photoconductive semiconductor.

3,623,788
LOW ANGLE HOLOGRAPHIC APPARATUS
Kenneth A. Snow, Greece, and Richard E. Vandewarker, Rochester, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Apr. 7, 1969, Ser. No. 814,147
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 13 Claims



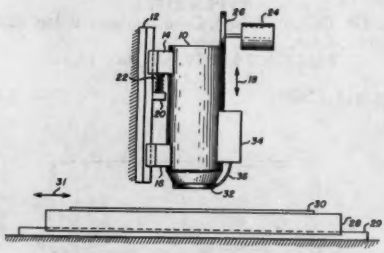
Apparatus forms a reflective subject hologram for use with a source of heterochromatic light in the subsequent reconstruction process. The apparatus provides for causing the rays reflected from the subject to interfere with reference rays, at the holographic surface, at a low angle. The low angle is formed by projecting a divergent laser beam through the surface of the hologram, the reference rays being subsequently retroreflected to the hologram surface to interfere with the rays reflected from the subject.

3,623,789
SYMBOL INDICATION DEVICE
Motoaki Kawazu, and Yoshio Fukushima, both of Tokyo, Japan, assignors to Kabushiki Kaish Ricah, Tokyo, Japan
Filed July 22, 1970, Ser. No. 57,271
Claims priority, application Japan, Aug. 9, 1969, 44/63190
Int. Cl. G02b 23/12, 3/08
U.S. Cl. 350—9 7 Claims



A symbol indication device comprises a symbol plate having a plurality of symbols thereon and a microlens plate having a number of microlenses, equal in number and position to the respective symbols, arranged in a plane and serving as projecting lenses for the pictures of the symbols. A field lens refracts rays emerging from the microlens plate so that the symbols form images in the same location. A concave lens is positioned at a location such that the rays from the field lens are within the focal length of the concave lens, and a screen is positioned so that the pictures of the symbol are directed thereon through the field lens and the concave lens. A condenser lens converges rays emerging from the screen. Any one of the symbols can be selectively illuminated by a light source to have its picture projected on the screen.

3,623,790
CAPACITANCE CONTROLLED AUTOMATIC FOCUSING SYSTEM
Stanley A. Buckstad, San Jose, Calif., and Woodrow L. Hayes, Rye, N.H., assignors to Singer-General Precision, Inc., Binghamton, N.Y.
Filed Dec. 31, 1969, Ser. No. 889,366
Int. Cl. G02b 7/04
U.S. Cl. 350—46 3 Claims



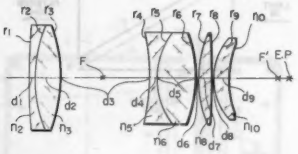
In those optical systems in which a lens is moved parallel to the film to either record information on the film or read information from the film, any variation in the distance between the film and the lens will degrade the optical focus. The disclosed embodiment of the present invention is a system for maintaining the distance from a lens to a film in such an optical arrangement constant. A metallic member is supported on the lens housing and the film is supported on a metallic table. The lens housing is mounted for movement by means of a servomotor toward and away from the film. The capacitance between the metallic member and the metallic table is sensed and a voltage proportional thereto is supplied to drive the servomotor to position the lens housing to maintain the capacitance constant.

3,623,791

ULTRAWIDE FIELD EYEPIECE

Toshifumi Uetake, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 8, 1970, Ser. No. 1,415
Int. Cl. G02b 9/34, 25/04
U.S. Cl. 350—220 1 Claim



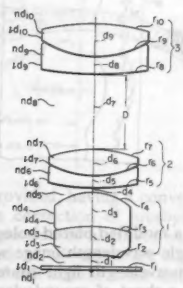
Ultrawide field eyepiece for a microscope having field lens elements and eyelens elements spaced a distance behind the field lens element with an airgap therebetween. The field lens elements comprise doublet lens elements having cemented achromatic surfaces and positive refractive power as a whole. The eye lens elements comprise thick meniscus lens elements having cemented surfaces of negative refractive power and lens element(s) of positive refractive power spaced a short distance from the thick meniscus lens elements behind the same. The foremost concave surface of the meniscus lens elements is directed toward the objective lens to be used together. The radius of curvature of the front convex surface of the rear convex lens element forming a part of the meniscus lens elements, the difference in the refractive index between the front and rear lens elements of the meniscus lens elements, the difference in the Abbe's number between the front and rear lens elements of the field lens elements, and the distance between the field lens elements and the eyelens elements satisfy certain predetermined conditions, respectively, so that ultrawide field is obtained while the eyepoint distance is made appropriately great and the missing of light in the marginal annular region of the field of view is prevented.

3,623,792

OBJECTIVE LENS FOR A MICROSCOPE

Toshifumi Uetake, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1970, Ser. No. 10,397
Int. Cl. G02b 9/12, 21/02
U.S. Cl. 350—229 1 Claim



Objective lens for a microscope of dry system high magnification having a leading lens element or group of which the lens element forming the air contacting surface at the image side is made of a glass having a high refractive index equal to or higher than 1.72 and a low index of dispersion equal to or higher than 50, the refracting surface at the object side of the lens element or group immediately succeeding the leading lens element or group being made convex toward the object while the amount of the airgap between the rearmost lens element or group and the lens element or group immediately preceding the rearmost than element or group is made equal to or greater than 0.7 times the focal length of the entire optical system of the objective lens, so that the various aberrations particularly the astigmatism and the curvature of field are widely compensated for.

ERRATUM

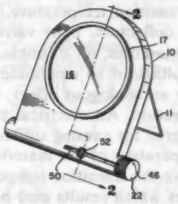
For Class 350—96 R see:
Patent No. 3,624,834

3,623,793

ADJUSTABLE MAGNIFYING MIRROR

Barron C. Merten, and Germain G. Pins, both of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed Mar. 2, 1970, Ser. No. 15,770
Int. Cl. G02b 5/10; F15b 7/00
U.S. Cl. 350—295 15 Claims



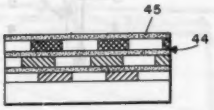
An adjustable magnifying mirror in which a flexible reflector is mounted by an airtight seal over a recess formed in a housing. A chamber is provided in the housing and carries a plunger movable therein. The chamber is connected through an air passage to the recess whereby movement of the plunger creates a differential pressure between the recess and the atmosphere causing the reflector to deform and change its magnification.

3,623,794

SPECTRAL ZONAL ENCODER

Steven L. Brown, Woburn, Mass., assignor to Technical Operations, Incorporated, Burlington, Mass.

Filed Dec. 19, 1968, Ser. No. 785,311
Int. Cl. G02b 5/22
U.S. Cl. 350—316 9 Claims



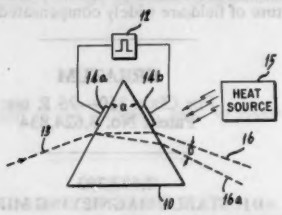
This disclosure concerns spectral zonal encoders for impressing image information carried by electromagnetic radiation in one or more predetermined spectral zones on spatial carriers, and fabrication methods therefor. One illustrated multizone encoder is a lamination of three grating filters comprising three photoresist grating patterns filled with dye-vehicle filter materials having preferential absorption in different regions of the visible spectrum.

3,623,795

ELECTRO-OPTICAL SYSTEM

George William Taylor, Princeton, and Arthur Miller, Princeton Junction, both of N.J., assignors to RCA Corporation

Filed Apr. 24, 1970, Ser. No. 31,601
Int. Cl. G02f 1/26
U.S. Cl. 350—150 12 Claims



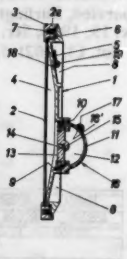
The sharp change in optical properties of ferroelectric and other materials at or near their transition temperature (in the case of ferroelectric material, this may be their ferroelectric—paraelectric transition temperature, Curie point) is made use of in light deflectors, light valves and the like. The material is heat biased as, for example, by the application of an alternating voltage of an amplitude sufficient to produce the TANDEL or an analogous effect, to a value close to its transition-temperature. An electrical pulse may then be applied to the material for causing sufficient additional heating to raise the temperature of the material to a different value such as one above the transition temperature. The change in optical properties which results may be employed to deflect or otherwise affect a beam of light applied to the material.

3,623,796

MIRROR WITH ADJUSTABLE FOCAL LENGTH

Jose Schweiger, Birmensdorf, Switzerland, assignor to Schweiger & Schweiger AG, Zug, Switzerland

Filed Aug. 1, 1969, Ser. No. 846,695
Claims priority, application Switzerland, Oct. 30, 1968, 16173/68
Int. Cl. G02b 5/10; F15b 7/00
U.S. Cl. 350—295 11 Claims



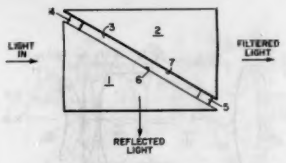
A mirror comprising a substantially concave housing with a light-reflecting resilient membrane airtightly secured to the edge of the housing across its base. Mounted on the housing is a compressible suction pump operative to create a partial vacuum in the interior of the housing such that the light-reflecting membrane is drawn inwardly into the housing to thus assume a substantially concave shape and to thereby adjust the focal length of the mirror.

3,623,797

INTERNALLY REFLECTING BARRIER CONTROL FILTERING APPARATUS

Harold Albert Daw, 2030 Guthrie Place, Las Cruces, N. Mex.

Filed Feb. 6, 1970, Ser. No. 9,308
Int. Cl. G02b 5/24
U.S. Cl. 350—311 6 Claims



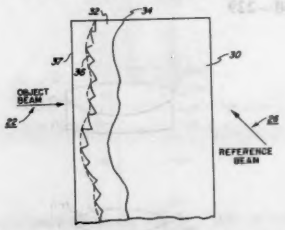
Filtering apparatus is provided for isolating a very narrow optical frequency range in the order of a spectral line width. Features include a fixed geometry of a light input member relative to a barrier member as well as an appropriate selection of the media of these two members. The media of the input member can be any material that is more refractive than the barrier member and it has a flush interface with the barrier member disposed at such an angle that the interface angle of incidence is greater than the critical angle of the two members. Thus, all light wavelengths other than the wavelengths of particular concern, are internally reflected in the input member. To permit the desired optical frequency bank to pass, the barrier member is formed of a media having a capacity for absorbing input light in the immediate vicinity of a wavelength that falls within the narrow frequency pass band. The absorption produces an irregularity in the refractive dispersion curve for the barrier media. When the angle of incidence and the interface of the input and in barrier members is fixed sufficiently close to the critical angle for this interface, the irregularity varies the relative refractive index sufficiently to vary the relationship of the critical angle with the angle of incidence and permit the narrow band to pass into the barrier member and on into the output member.

3,623,798

BLAZED HOLOGRAM FABRICATION

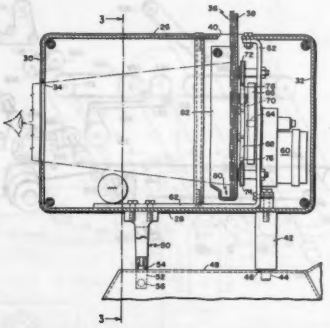
Nicholas K. Sheridon, Clarkes Crossing, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Jan. 21, 1970, Ser. No. 4,648
Int. Cl. G02b 27/22; B44f 1/04
U.S. Cl. 350—3.5 30 Claims



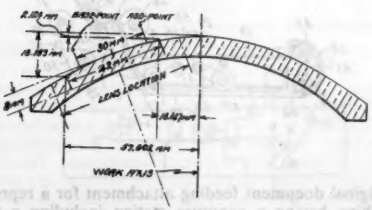
Production of a modified blazed hologram is disclosed that will exhibit a single-wavelength image when illuminated by a white, i.e., multiwavelength light source. One embodiment includes coating a sheet of ground glass on the ground side thereof with a photoresist material. This photoresist is exposed in the presence of object and reference coherent light waveforms and subsequently developed. Blazed fringes will form on the irregular surface thereof. When reilluminated with a light beam similar in form and wavelength to the reference beam, the positive first order image is reconstructed without distortion. Images of different orders will appear randomly diffused as will other wavelengths.

3,623,799
TECHNIQUES FOR OBJECTIVELY MEASURING VISUAL ACUITY
Michel Millodot, Providence, R.I., assignor to Biometrics, Inc., Cambridge, Mass.
Filed Feb. 5, 1970, Ser. No. 8,846
Int. Cl. A61b 3/02
U.S. Cl. 351—32 25 Claims



A technique for measuring either binocular or monocular visual acuity in which the subject's eye or eyes are stimulated by an oscillating target designed to induce an easily measured, large, regular, pendular movement of the subject's eyes. The image of the target is reduced dimensionally during the test until the subject no longer can resolve the markings on the target at which time the pendular, repetitive eye movements stop completely, thus providing a clear indication that the patient's threshold of resolution has been reached.

3,623,800
OPHTHALMIC LENS OF CHANGING POWER
David Volk, 3336 Kersdale Road, Pepper Pike, Ohio
Continuation of application Ser. No. 518,848, Jan. 5, 1966, which is a continuation-in-part of application Ser. No. 292,380, July 2, 1963, now Patent No. 3,239,967, dated Mar. 15, 1966. This application Oct. 16, 1969, Ser. No. 867,433
Int. Cl. G02c 7/06
U.S. Cl. 351—169 5 Claims

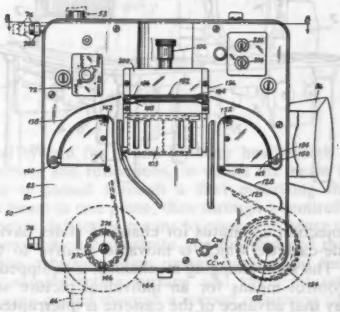


An optical lens is provided, having a convex aspheric front surface useful for the correction of presbyopia. This front surface is a nonaxial portion of a convex surface of revolution, all meridian sections of which are identical elliptical arcs and all sections of this surface other than those sections normal to the axis of revolution being noncircular, the axis of revolution of said convex surface coinciding with a straight portion of the modified evolute of said elliptical arc. This front surface is characterized by having a substantially constant difference in principal curvatures at all points along all meridional sections providing a substantially constant astigmatism at all points outside the vertical principal meridian, while both principal curvatures along any elliptical arc meridian section change continuously and regularly by substantially equal amounts to provide an accelerating surface. This novel front surface is intended for use in a lens having a negatively curved spherocylindrical back surface optically coacting with the front surface and at least neutralizing the constant astigmatism of the front surface.

ERRATUM

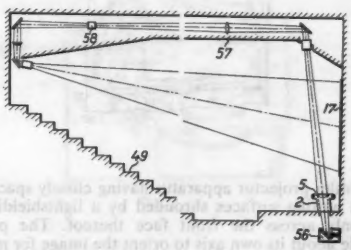
For Class 352—91 see:
Patent No. 3,623,989

3,623,801
FILM PROJECTOR
Richard P. Gundlach, Belleville, Ill., assignor to Gamco Industries, Inc., Big Spring, Tex.
Filed Apr. 7, 1969, Ser. No. 814,127
Int. Cl. H03b 1/00
U.S. Cl. 352—173 11 Claims



A projector for projecting intelligible matter from one or two films. In order to reduce wear on the film, the film is taken from a supply reel and fed to a takeup reel by sensing arms which sense the tension in guided film loops and control supply and takeup motors to control the play out and take up of the reels.

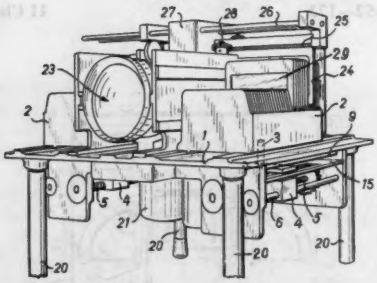
3,623,802
OVERHEAD PROJECTOR
Erwin Hubner, Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany
Filed Mar. 14, 1969, Ser. No. 807,368
Claims priority, application Germany, Mar. 29, 1968, P 17 72 094.4
Int. Cl. G03b 1/48, 21/14, 21/00
U.S. Cl. 353—23 9 Claims



In the image-forming bundle of light rays of an overhead projector at least one further objective is arranged in addition to the projecting objective, which further objective serves as an intermediate optical system. Reflecting means

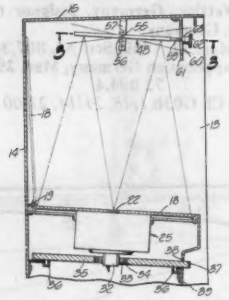
are provided in the path of the light rays; and the objectives and the reflecting means are mounted structurally separate from the table which carries the supporting plate for the writing foil so that the view for the writer and for the audience is not obstructed.

3,623,803
PROJECTION APPARATUS
Thomas Ganz, Zurich; Leonard Ellerkamp, Adliswil, and Walter Ryter, Zurich, all of Switzerland, assignors to Ganz & Co., Zurich, Switzerland
Filed Sept. 22, 1969, Ser. No. 859,763
Claims priority, application Switzerland, Sept. 27, 1968, 14532 1/68
Int. Cl. G03b *23/02*
U.S. Cl. 353—25 **8 Claims**



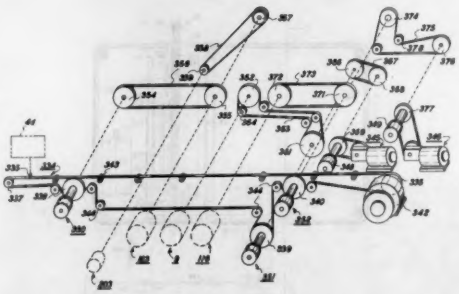
A projection apparatus for changing slides having at least one slide-cassette which is movable relative to the optical system. The slide-changing mechanism is equipped with electrical control means for an individual picture selection in such way that advance of the cassette is interrupted when the desired position is reached.

3,623,804
MICROFILM PROJECTOR APPARATUS
Francis F. Spreitzer, 4415 W. 62nd St., Los Angeles, Calif.
Filed Oct. 18, 1968, Ser. No. 768,641
Int. Cl. G03b *21/28*
U.S. Cl. 353—77 **24 Claims**



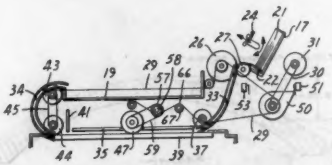
Microfilm projector apparatus having closely spaced viewing and writing surfaces shrouded by a lightshielding hood open only across the front face thereof. The projector, rotatable about its own axis to orient the image for most convenient viewing, is concealed from view beneath the viewing surface and projects the image through a small area of that surface onto an inverting mirror. Movement of the image-carrying film strip in either direction is regulated by a single knob controlling a variable-speed reversible motor drive for the film feed.

3,623,805
DRIVE MECHANISM FOR IMAGING APPARATUS
Raymond K. Egnaczak, Williamson, and Charles H. Myers, Palmyra, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Nov. 14, 1969, Ser. No. 876,636
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **16 Claims**



An electrical-mechanical drive mechanism is employed in a photoelectrophoretic imaging system to propel a flat plate electrode on which images are formed along a generally linear path and to rotate roller electrodes that contact the flat plate during its travel. The angular speed of the rollers and the translational speed of the flat plate are synchronized to minimize disturbing an image on the flat plate electrode. Separate drive mechanisms rotate the rollers prior to the arrival of the flat plate adjacent a roller to overcome inertia of the roller and to perform operations secondary to the imaging process.

3,623,806
ORIGINAL DOCUMENT FEEDER WITH REGISTERING GATE AND MOVABLE PLATEN
Jerome M. Short, Burnsville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 20, 1969, Ser. No. 867,634
Int. Cl. G03g *15/04*
U.S. Cl. 355—14 **4 Claims**



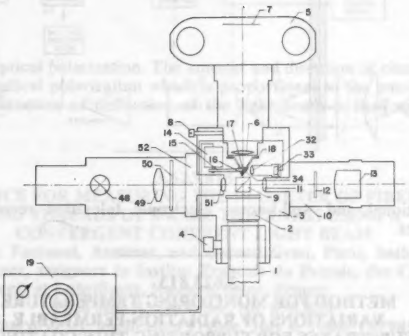
An original document feeding attachment for a reproducing machine having a exposure station including a transparent supporting member in which a registering member is adapted to be positioned over the exposure station of the reproducing machine to define therewith a portion of a guide path between a document supply tray and a document receiving tray. The attachment includes a feeder for removing one document at a time from a stack of documents in the supply tray and transporting the document to a position beneath the registering member. Means are provided for registering the removed document with the exposure station and registering member including a registration gate movable relative to the registering member into and out of the document guide path to obstruct the document guide path. The document may then be carried to the receiving tray when the machine has completed the necessary exposures.

3,623,807

APPARATUS FOR TAKING PHOTOMICROGRAPHIC PICTURES

Fritz Gabler; Leo Heraut, and Karl Kropp, all of Vienna, Austria, assignors to C. Reichert Optische Werke A.G., Vienna, Austria

Filed Sept. 8, 1969, Ser. No. 856,021
Int. Cl. G03b 27/70
U.S. Cl. 355—18 3 Claims



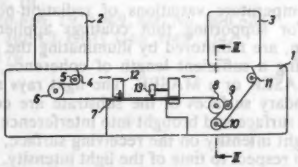
A microscope adapter to mount a camera, the adapter including a fully reflecting mirror and a partially reflecting mirror in its optical path. Mirrors permit instrument adjustment through auxiliary viewing apparatus. A motor connected to the fully reflecting mirror oscillates the same to provide shuttering.

3,623,808

PHOTOGRAPHIC-COPYING APPARATUS

Wilhelm Baasner, and Boris Koleff, both of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 24, 1970, Ser. No. 31,653
Claims priority, application Germany, Apr. 25, 1969, P 19 21 281.8
Int. Cl. G03b 27/46
U.S. Cl. 355—40 10 Claims



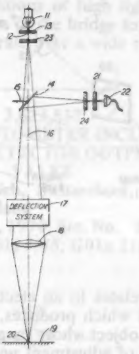
A photographic copying apparatus wherein a web of photosensitive material is moved stepwise to place successive increments into registry with a printing station. The web is driven by a roller which can be suddenly arrested in response to detection of bits of information encoded on a carrier which travels in synchronism with the web or forms an integral part of the web. The shaft of the roller is rotated by the driven element of a clutch and carries a gear whose teeth are engaged by a pawl which is controlled by a device serving to detect successive bits on the carrier whereby the pawl holds the roller against rotation during intervals which are required for exposure of photosensitive material to printing light.

3,623,809

OPTICAL SYSTEM WITH POLARIZING FILTERS FOR LINE FOLLOWER HEAD

Kenneth Victor Diprose, and Arthur Stuart Forbes, both of Bath, England, assignors to Hancock & Co. (Engineers) Limited, Buckinghamshire, England

Filed Dec. 23, 1969, Ser. No. 887,486
Int. Cl. G03b 27/70
U.S. Cl. 355—66 5 Claims



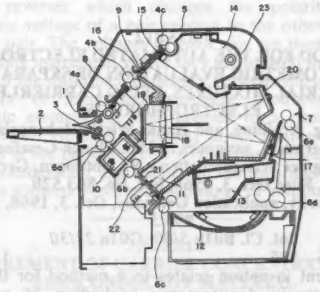
An optical system for a line follower head which avoids geometric errors and reflections, in which the beam from a light source is passed through a first polarizing filter to polarize the beam in one plane, then through a semireflecting surface to beam deflecting means to cause the beam to scan the outline carried on a substrate, the diffused and reflected light from the substrate being passed back along the same axis to the semireflecting surface and the light reflected therefrom being passed through a second polarizing filter set in quadrature with first polarizing filter to a photosensitive element.

3,623,810

TUBULAR LIGHT SOURCE FOR A FLOW-TYPE DUPLICATING MACHINE

Masaya Ogawa, Osaka, and Yorio Yamanoi, Toyokawa-shi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 11, 1969, Ser. No. 798,394
Claims priority, application Japan, Feb. 15, 1968, 43/11374
Int. Cl. G03b 27/76
U.S. Cl. 355—67 1 Claim

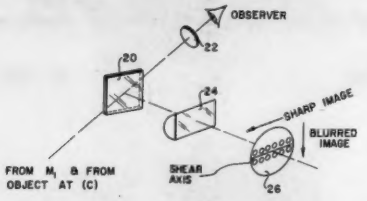


A tubular light source for a flow-type duplicating machine provides an image with uniform brightness by making its luminous-brightness stronger around both its sides than around its middle along its longitude. A plurality of electrically conductive materials are disposed more densely in the middle portion of the light than around its end portions.

3,623,811
ELECTROOPTICAL RANGEFINDER MEANS

David B. Lederer, and David E. Perlman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of application Ser. No. 751,080, Aug. 8, 1968. This application Oct. 30, 1970, Ser. No. 85,699
Int. Cl. G01c *3/08*
U.S. Cl. 356—4 8 Claims



This invention relates to an electrooptical rangefinder of the split field type which produces, along a shear axis, two split images of the object whose range distance is to be determined, the degree of adjustment necessary to bring the two split images into symmetrical alignment being a function of the range distance.

A plurality of *n* photosensitive transducer pairs are located on opposite sides of the shear axis, and adapted to receive the illumination reflected from the two split images. Electrical circuitry is coupled to the plurality of *n* photosensitive transducer pairs to provide a plurality of *n* signals, the signal for each discrete pair being arbitrarily denominated a logical ZERO or a logical ONE indicative of the balanced or unbalanced state of illumination experienced by a photosensitive transducer pair respectively.

Logic circuitry is coupled to the electrical circuitry to receive the plurality of logical signals and derive an output signal when a predetermined number of the photosensitive transducer pairs receive balanced illumination, which output signal, by reason of the fact that the split images are in alignment, is a function of the range distance.

ERRATUM

For Class 356—103 see:
Patent No. 3,624,835

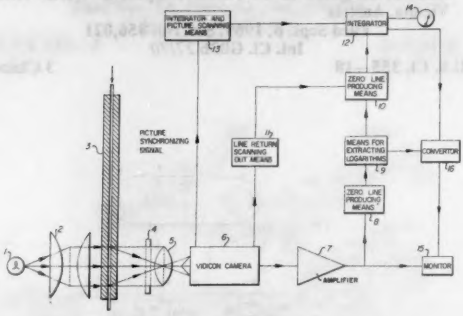
3,623,812
METHOD FOR THE AUTOMATED ELECTRONIC DENSITOMETRIC EVALUATION OF SEPARATED MATERIAL MIXTURES, USING CARRIERLESS ELECTROPHORESIS

Kurt Hannig, Krailling, and Hanns Wirth, Hohenpeissenberg, both of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany

Filed Oct. 3, 1969, Ser. No. 863,520
Claims priority, application Germany, Oct. 3, 1968, P 18 00 993.3
Int. Cl. B01k *5/00*; G01n *21/30*
U.S. Cl. 356—105 11 Claims

The present invention relates to a method for the automated electronic densitometric evaluation of separated material mixtures, using carrierless electrophoresis, in which the distribution pattern of the light-absorbing or -reflecting mixture components, for example in the form of an enlarged or reduced optical image, is scanned in accordance with the flying point principle, the scanned points are converted into current pulses and the current pulses belonging to the scanned line are integrated.

Throughout the specification, reference is made to a "Vidicon" tube as an element in the apparatus and process of the present invention. This term is utilized to indicate con-

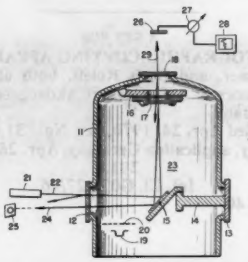


ventional and well-known electronic television recording tubes.

3,623,813
METHOD FOR MONITORING TEMPERATURE VARIATIONS OF RADIATION-PERMEABLE SUBSTRATES FOR SUPPORTING THIN COATINGS APPLIED BY VACUUM DEPOSITION

Dionys Hacman, Trubbach, Switzerland, assignor to Balzers Patent-Und Beteiligungs AG, Furstentum, Liechtenstein

Filed Dec. 18, 1968, Ser. No. 784,721
Claims priority, application Switzerland, Dec. 21, 1967, 18037/67
Int. Cl. G01b *9/02*
U.S. Cl. 356—108 1 Claim



The temperature variations of radiation-permeable substrates, for supporting thin coatings applied by vacuum deposition, are monitored by illuminating the substrate with light having a sufficient length of coherence, such as light form a LASER or a MASER. The light rays reflected from two boundary surfaces of the substrate are combined on a receiving surface and brought into interference. The distribution of light intensity on the receiving surface, and the variations with respect to time of the light intensity, determine the thermal expansion of the substrate and thus its temperature. As light is also reflected from the surface of the coating, it is possible to monitor the thickness of the coating being applied.

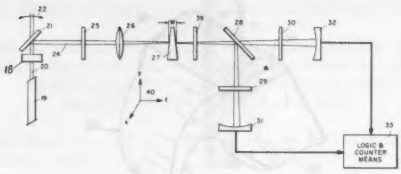
3,623,814
LIGHT BEAM DEFLECTION SENSOR

Carl F. Buhrer, Oyster Bay, N.Y., assignor to General Telephone & Electronics Laboratories, Inc.

Filed Apr. 1, 1969, Ser. No. 811,804
Int. Cl. G01b *11/26*
U.S. Cl. 356—114 11 Claims

A deflection sensing system for measuring the deflection of a collimated beam of light having a component of plane

polarized light. A wedge of birefringent crystal with thickness varying linearly in the direction of deflection of the beam is positioned in the path of the beam. The beam of light emerging from the wedge contains a continuously changing degree



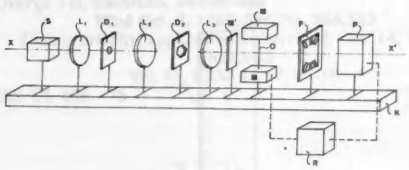
of elliptical polarization. The amount and direction of change in elliptical polarization which is proportional to the amount and direction of deflection of the light beam is then measured.

3,623,815

DEVICE FOR MEASURING THE DIAMETER OF FIBERS AND THREADS OF SMALL THICKNESS USING A CONVERGENT COHERENT LIGHT BEAM

Andre Fontanel, Asnieres, and Gerard Grau, Paris, both of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Hauts de Seine, France

Filed July 3, 1969, Ser. No. 838,809
Claims priority, application France, July 4, 1968, 157985
Int. Cl. G01b *11/10*
U.S. Cl. 356—159 **16 Claims**



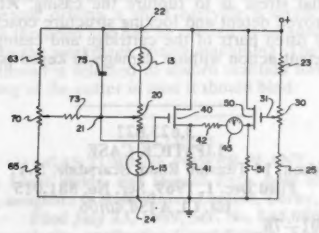
An optical device for measuring the diameter of thin fibers using a converging beam of coherent light and including means for supporting the fiber in the convergent light beam; means for rotating the fiber around its longitudinal axis and translating the fiber in orthogonal directions, and recording means for recording the diffraction diagram of the fiber.

3,623,816

SYSTEM FOR MEASUREMENT OF RELATIVE COLOR INTENSITIES

William H. Slavik, Oak Lawn, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 19, 1969, Ser. No. 800,581
Int. Cl. G01j *3/46, 3/48, 1/42*
U.S. Cl. 356—176 **6 Claims**



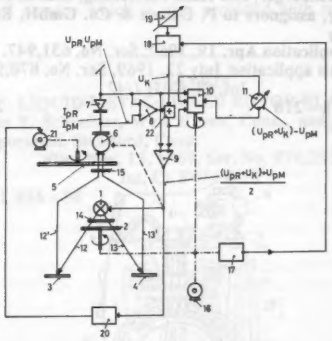
A portable meter for tracking any two colors of light emitted from a color cathode-ray tube at all brightness settings includes first and second light-dependent resistors connected in two arms of a bridge circuit in series with one another across a source of DC voltage with the other two arms of the bridge circuit consisting of equal resistors connected in parallel across the light-dependent resistors. The tap of a potentiometer connected between the light-dependent resistors and the tap of a potentiometer connected between the resistors to opposite sides of a DC meter through insulated gate field effect transistors. Light impinging upon each of the light-dependent resistors is passed through a color and a neutral density filter, permitting light of only one color to strike the associated resistor. Provision is made for adjustment of the bridge balance through the potentiometers for conditions of high light, low light and, through an additional arm of the bridge for darkness; so that the meter output is accurate over a wide range of brightness conditions.

3,623,817

COMPARISON DENSITOMETER INCLUDING MEANS TO MAINTAIN THE DETECTOR OUTPUT AT A MEANS VALVE

Tino Ceilo, Buchs, Zurich, Switzerland, assignor to Ciba Limited, Basel, Switzerland

Filed Feb. 24, 1970, Ser. No. 13,650
Int. Cl. G01j *3/48*; G01n *21/22*
U.S. Cl. 356—179 **12 Claims**



This invention relates to a densitometer for measuring small differences in density. The densitometer comprises a light source providing a reference light beam for imaging on a reference object and a measuring light beam for imaging on an object whose density relative to that of the reference object is to be measured. Light reflected from the two objects is transmitted to a photodetector via an optical chopper that sequentially interrupts the transmitted beams. The photodetector produces sequential pairs of voltages which are applied to a logarithmic element in the form of a diode which produces pairs of logarithmic voltages for application to a polarity reverser which changes the polarity of one logarithmic voltage of a pair relative to the other voltage of the same pair. The voltages of each pair are then applied to an indicating instrument where they are utilized to give an indication of the difference in density between the two objects. The pairs of logarithmic voltages produced by the logarithmic element are also applied to a control circuit which controls either the intensity of the source or the amplification of the photodetector so that the voltages produced by the photodetector and applied to the logarithmic element are always within a predetermined range of amplitudes.

3,623,818

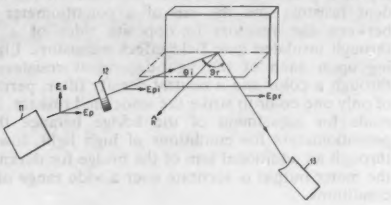
MEASUREMENT OF CARRIER CONCENTRATION OF SEMICONDUCTOR MATERIAL

Edward E. Gardner, Shelburne, Vt.; William A. Keenan, Poughkeepsie, and Paul A. Schumann, Jr., Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1969, Ser. No. 885,002
Int. Cl. G01n *21/48*; G01i *1/16*
U.S. Cl. 356—209 **4 Claims**

Carrier concentration of a semiconductive material is measured by directing monochromatic light at the material. The

light is polarized with its electric vector in the plane of incidence. The angle of incidence is varied until a minimum in reflectivity occurs. The angle at which the minimum occurs,



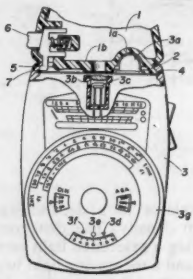
referred to as the pseudo-Brewster angle θ_B, is related to the carrier concentration, whence the carrier concentration may be determined by comparison with a series of standards or by calculation.

3,623,819

UNIVERSALLY APPLICABLE PHOTOMETER WITH ADAPTERS FOR REDUCING THE MEASURING ANGLE

Erwin Pfaffenberger, and Hans Forsterling, both of Erlangen, Germany, assignors to P. Gossen & Co. GmbH, Erlangen, Germany

Original application Apr. 19, 1967, Ser. No. 631,947. Divided and this application July 22, 1969, Ser. No. 870,961
Int. Cl. G01j 1/42
U.S. Cl. 356—218 2 Claims



The present disclosure relates to a universally applicable light-measuring device, especially photometer, which comprises a main measuring device, e.g. an exposure meter, and easily exchangeable auxiliary measuring devices or adapters for reducing the measuring angle which, when individually attached to the main measuring device, form therewith new unitary devices, as to outer appearance and function. All adapters have identical bottom portions with two hooklike extensions to be received in corresponding recesses in the main measuring device. One of the extensions is resiliently journaled and may be displaced by a pushbutton for disconnecting the adapter from the main device.

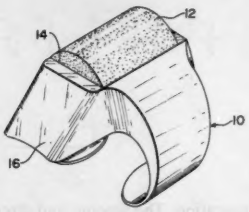
3,623,820

METHOD AND MEANS FOR INSTANTLY FILLING AND SEALING AN ENVELOPE

Alfred G. B. Prather, P.O. Box 53, 5700 Lincoln Ave., Lanham, Md.

Filed Feb. 24, 1970, Ser. No. 13,612
Int. Cl. B43m 11/06
U.S. Cl. 401—8 4 Claims

The finger ring device having an open finger band with substantially stiff but flexible ends is adapted for placing on a finger of either hand so that a wetting sponge mounted on the head of the ring may be brushed over the gummed strip of the open flap of an envelope simultaneously with the insertion of the contents into this envelope, which is being held in the other hand, and the flap is then turned down and the letter instantly sealed, without making any extra strokes of the hand to reach for a wetting device and returning it to its resting place, after insertion of the contents and before sealing the envelope, the result being two filled and sealed envelopes in the time previous methods required to fill and seal just one. Thus in mass mailings, e.g., a saving in time and labor of 50 percent is accomplished by using this simple device and method.

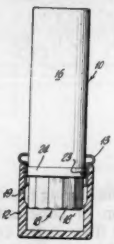


3,623,821

COSMETIC CONTAINER

Melvin Gould, Hamden, Conn., assignor to Eyelet Specialty Company, Wallingford, Conn.

Filed Nov. 24, 1969, Ser. No. 879,138
Int. Cl. A45d 40/06
U.S. Cl. 401—86 7 Claims



The invention contemplates an improved refill cartridge and insert-sleeve construction for use in lipstick or the like containers having outer decorative casings, the sleeve being permanently assembled into the bore of the base part of the outer decorative casing. The particular feature of the invention resides in provision of such circumferential uniformity of the sleeve fit in the outer decorative casing that inherently weak plastic outer casings are smoothly cylindrically supported and permanently engaged, without imposing such circumferential stress as to rupture the casing. At the same time, improved detent and locking structure coacts between removably fitted parts of the cartridge and casing to assure smooth detent action without damage to keyed parts or surfaces.

3,623,822

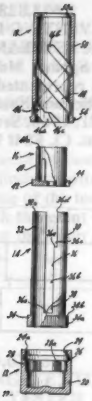
LIPSTICK CASE

Emil Davidson, 14 Tunstall Road, Scarsdale, N.Y.

Filed Dec. 1, 1969, Ser. No. 881,015
Int. Cl. A45d 40/06
U.S. Cl. 401—78 1 Claim

A lipstick case having a cylindrical case and a base which are connected for relative rotation and are effective, in conjunction with an internal shell, to displace a cup which receives a lipstick in order to extend and retract the lipstick in relation to the case. Locking arrangements are provided

for releasably securing the cup in a loading position to facilitate the loading into the case of a lipstick and in a



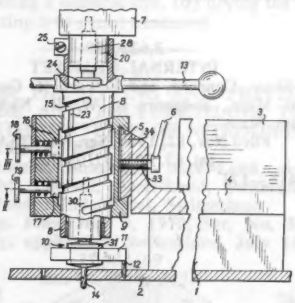
retracted position to preclude inadvertent extension of the lipstick during periods of nonuse.

3,623,823

PORTABLE APPARATUS FOR PRODUCING CIRCULAR OPENINGS IN WORKPIECES

George Val, Daellikon, Switzerland

Filed Oct. 8, 1969, Ser. No. 864,583
Claims priority, application Switzerland, Oct. 14, 1968, 15313/68
Int. Cl. B23b *45/14, 47/18*
U.S. Cl. 408—76 **9 Claims**



A portable apparatus for producing circular openings in workpieces, by use of a magnetic stand for supporting a spindle. A spindle is connected with the stator of a motor, the rotor thereof driving a shaft carrying a circle cutter. The spindle is threaded and can be rotated to be advanced axially relative to the workpiece during machining. The pitch of the spindle thread is selected to absorb reaction forces and permit freeing of the cutter in case it should bind.

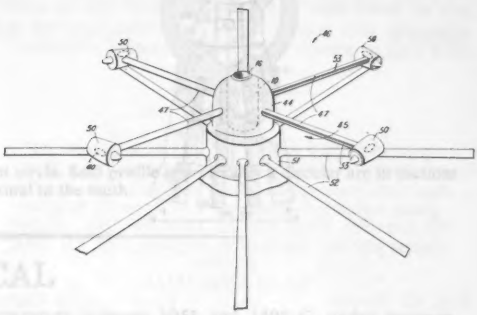
3,623,824

GAS TURBINE POWER PLANT

Geoffrey Light Wilde, and Donald Eyre, both of Derby, England, assignors to Rolls-Royce Limited, Derby, England

Filed July 23, 1969, Ser. No. 844,086
Claims priority, application Great Britain, Aug. 5, 1968, 37,309/68
Int. Cl. F02c *7/02;* **F02k** *3/02*
U.S. Cl. 416—21 **5 Claims**

A gas turbine power plant, especially for a helicopter, has two gas turbine gas generators arranged back-to-back on a common axis, each gas turbine gas generator being located in a main flow duct which also houses a free radial-flow turbine in flow series with the gas generator. A fan duct coaxially surrounds the main flow duct and houses two centrifugal flow



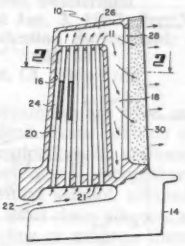
fan rotor stages drivingly connected to the free turbine. The fan exhaust drives turbofans mounted at the tips of hollow arms of a rotor which is also provided with rotary bladed arms.

3,623,825

LIQUID-METAL-FILLED ROTOR BLADE

William F. Schneider, West Haven, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Nov. 13, 1969, Ser. No. 876,295
Int. Cl. F01d *5/18*
U.S. Cl. 416—96 **8 Claims**



A hollow turbine blade is filled with a liquid metal which is cooled by means of a plurality of tubes through which coolant air is passed. The walls of the turbine blade are in contact with the liquid metal which acts as the heat exchange mechanism, the air acting as the system coolant.

3,623,826

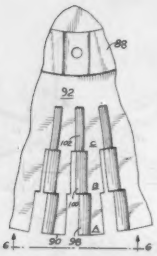
TURBINE PUMP WITH IMPROVED ROTOR AND SEAL CONSTRUCTIONS

Arman Mandell, Chicago, and Gordon Osterstrom, Winnetka, both of Ill., assignors to Sargent-Welch Scientific Company, Skokie, Ill.

Filed Oct. 27, 1969, Ser. No. 869,842
Int. Cl. F04b *19/16;* **F04d** *29/00*
U.S. Cl. 416—237 **1 Claim**

A high-vacuum axial flow turbine pump having novel oil seal and rotor constructions. The rotors are machined from a single blank of material and include a row of inclined blades divided into a plurality of segments each defined by a pair of inclined faces, offset from but parallel to the inclined faces on an adjacent segment of the blade. The improved oil seal closely surrounds an end portion of the impeller shaft containing a plurality of the rotors, and includes a pair of seal elements having inwardly directed annular faces, and a pair of oil collector grooves, one associated with each seal ele-

ment, with the axially innermost groove having a foam or like insert therein for picking up oil and transferring it by capillary action and gravitational force to an outlet in a lower portion of the seal.

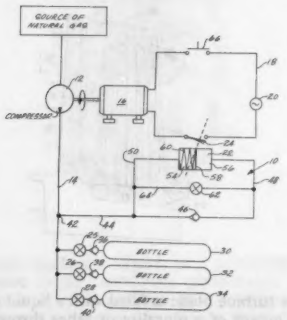


3,623,827

PROTECTIVE CIRCUIT FOR PRESSURE CHARGING OF NATURAL GAS AND THE LIKE

Robert W. McJones, 529 Via Del Monte, Palos Verdes Estates, Calif.

Filed Mar. 16, 1970, Ser. No. 19,903
Int. Cl. F04b *49/10*
U.S. Cl. 417—9 **4 Claims**



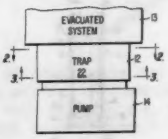
A protective fluid circuit is in fluid circuit with the high-pressure side of a compressor for natural gas and controls the energization of the power source for the compressor such that when there is a drop in the pressure on this side, as when there is a leak, the compressor is inactivated. The protective circuit includes a check valve which opens when the pressure upstream of the valve is slightly more than the pressure downstream of the valve, the upstream side of the check valve being in pressure communication with the high-pressure side of the compressor. A pressure-sensitive switch of the balanced-pressure-type is in parallel fluid circuit with the check valve, with the outlet of the valve providing one source of pressure and the inlet of the valve providing the other source of pressure. The pressure-sensitive switch controls a switching element in the circuit to the compressor's power source that when the valve closes, the switching element opens the circuit to the power source to inactivate the compressor. For starting the compressor, a selectively actuatable bypass valve is disposed across the pressure-sensitive switch to supply compressor pressure on both sides of the switch and prevent it from opening the circuit to the compressor power source.

3,623,828

TRAP FOR PREVENTING DIFFUSION PUMP BACKSTREAMING

Harold Shapiro, Silver Spring, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1968, Ser. No. 789,045
Int. Cl. F04f *9/06*
U.S. Cl. 417—152 **10 Claims**



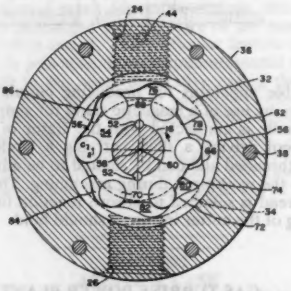
An oil-backstreaming trap is located in a vacuum line between an oil diffusion pump and the evacuated system so that gases from the system are drawn through the trap on the way to the pump. First and second baffle plates extend partially across the cross-sectional area of the trap and are spaced apart from each other along the direction of gas flow. The surface of the baffle plate closest to the evacuated system is smooth. The other baffle plate surfaces are roughened to form a large plurality of raised and depressed portions such as are formed by milling the roughened surfaces to form a large plurality of pyramid-shaped elements. In this manner, oil vapor from the diffusion pump which tends to backstream into the evacuated system, is coalesced on the roughened surfaces to form oil drops which then fall back into the diffusion pump.

3,623,829

INTERNAL GEAR SET

John D. Shaw, Concord, and Edward H. Gervais, Melrose, both of Mass., assignors to W. H. Nichols Company, Waltham, Mass.

Filed Nov. 12, 1969, Ser. No. 875,905
Int. Cl. F01c *1/10, 1/00*
U.S. Cl. 418—171 **6 Claims**

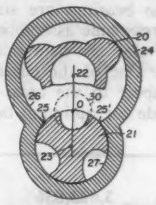


An internal gear set comprising an inner gear having a number of radially projecting cylindrical tooth members engaging a conjugate internally toothed outer gear. The latter has one more tooth than there are tooth members on the

inner gear and is mounted eccentrically to the inner gear so that the gears move conjugately relative to one other.

3,623,830
ROTOR WITH HELICAL TEETH FOR DISPLACING COMPRESSIBLE FLUID
Ernest Wildhaber, Brighton, N.Y., assignor to Bird Island, Inc., Boston, Mass.
Filed Apr. 1, 1970, Ser. No. 24,484
Int. Cl. F01c *1/16*; F04c *1/10, 17/12*
U.S. Cl. 418—201 **5 Claims**

This rotor has helical teeth of concave profile extending principally inside of its cylindrical pitch surface. Said profile is tangent to the root surface of the teeth. The pitch point (0, FIG. 2) radially in line with the point (33) of tangency has a larger distance (0–37) from the outer end of the profile than (0–33) from the root circle, on one side of the teeth. The increase is at least 10 percent of the distance (0–33) from the



root circle. Said profile is preferably a circular arc in sections normal to the teeth.

CHEMICAL

3,623,831
PROCESS FOR DYEING TEXTILE MATERIAL OF MIXTURES OF POLYESTER AND CELLULOSE FIBRES
Rudolf Lowenfeld, Buchschlag, and Uwe Kosubek, Offenbach am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Apr. 28, 1969, Ser. No. 820,020
Claims priority, application Germany, Apr. 30, 1968, P 17 69 278.3
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 **5 Claims**

Textile materials consisting of mixtures of polyester and celluluose fibers are dyed equal shades by (a) impregnation with an alkaline solution containing (1) a coupling component, (2) a diazoamino or tetrazoamino compound or an antidiazotate, and (3) wetting or dispersing agents, (b) drying the material, (c) impregnation with an acid solution containing a disperse dye, (d) drying the material and (e) subjecting it to a heat treatment.

3,623,832
PROCESS FOR THE DYEING AND PRINTING OF POLYAMIDE AND POLYURETHANE TEXTILE FIBRES WITH MIXTURES OF NITRODIPHENYLAMINO DYESTUFFS
Daniel van Assche, Binningen, Basel-Land, and Josef Frauenknecht, Therwil, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland
No Drawing. Filed July 9, 1970, Ser. No. 53,679
Claims priority, application Switzerland, July 18, 1969, 11,033/69
Int. Cl. D06p *3/24*
U.S. Cl. 8—25 **36 Claims**

A process for the dyeing and printing of natural polyamide fibres and synthetic polyamide and polyurethane fibres using a mixture of two dyes of the nitrodiphenylamino series, each of which contains a single sulphonic acid group plus a sulphonamide group which may be unsubstituted or substituted by an alicyclic, aromatic or heterocyclic radical.

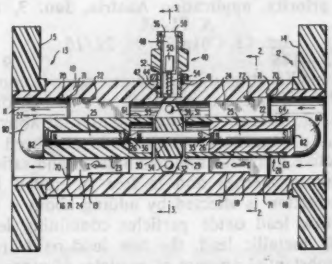
3,623,833
METHOD FOR DYEING CELLULOSE TRIACETATE USING ANIONIC DYES
Amerigo Wildermuth, Milan, and Ferdinando Marchi, Cesano Maderno, Italy, assignors to Aziende Colori Nazionali ACNA S.p.A., Milan, Italy
No Drawing. Filed Mar. 7, 1969, Ser. No. 805,366
Claims priority, application Italy, Mar. 11, 1968, 13,808/68
Int. Cl. D06p *1/20, 3/40*
U.S. Cl. 8—40 **5 Claims**

A process for dyeing textile materials of cellulose triacetate which comprises carrying out the dyeing at a temperature between 105° and 140° C. under pressure in an aqueous dyeing bath containing at least one water-soluble anionic dye, glycerin triacetate and between 10 and 120 g./l. of a salifying agent selected from the group consisting of sodium chloride and sodium sulphate.

3,623,834
DYE SOLUTION OR PRINT PASTE CONTAINING CHLORINATED HYDROCARBON WITH AN ALCOHOL, KETONE, DIOXANE, ALKANOIC ACID AMIDE, TETRAMETHYL UREA OR PYRIDINE AND POLYAMIDE DYEING THEREWITH
Marcel Seuret, St. Kilda, Melbourne, Victoria, Australia, and Willi Leutenegger, Bottmingen, Basel-Land, and Hans E. Wegmuller, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed Jan. 3, 1967, Ser. No. 606,553
Claims priority, application Switzerland, Jan. 5, 1966, 102/66
Int. Cl. D06p *5/06*
U.S. Cl. 8—172 **9 Claims**

Synthetic linear polyamides are dyed or printed with a short chain chlorinated alkane solution containing any one of an alkanol, cycloalkanols, aralkanols, alkanone, cycloalkanone, alkylene glycol monoalkyether, furfuryl alcohol, tetrahydrofurfuryl alcohol, alkanediols, dioxane, N,N-dialkylamides of short chain alkanoic acids, N,N,N'-tetramethyl urea, pyridine or mixtures thereof.

3,623,835
GAS FLOWMETER
Charles L. Boyd, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed June 11, 1969, Ser. No. 832,343
Int. Cl. G01f *1/06*
U.S. Cl. 73—231 **9 Claims**



A magnetic flowmeter of the turbine type wherein the rotor blades are substantially diamagnetic except for the

inclusion of magnetic slugs in the tips thereof. The rotor is mounted within the flowmeter housing by means of a combination jewel and magnetic bearing at each end of the rotor axle. The bearings are statically held within the flowmeter by cross-vane assemblies which engage the flowmeter housing and are held against rotation by a pair of dowel pins. One of the bearings may be axially adjustable with respect to the cross-vane assembly and rotor axle to provide for optimum bearing clearances.

3,623,836

PROCEDURE FOR THE PREPARATION OF SODIUM PERBORATE MONOHYDRATE

Jose Luis Denaeyer and Willy Kegelart, Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium

No Drawing. Filed July 16, 1969, Ser. No. 842,340
Claims priority, application Belgium, July 17, 1968, 61,080
Int. Cl. C01b *15/12*
U.S. Cl. 23—60 **3 Claims**

Monohydrated sodium perborate is prepared by dehydrating sodium perborate tetrahydrate continuously in a fluid bed dryer by the action of hot air which is at a temperature not lower than 180° C. Sodium perborate monohydrate thus product has excellent strength against attrition.

3,623,837

PROCESS FOR PRODUCING FINE PARTICLE SIZE ALUMINA HYDRATES

Allan C. Kelly, Palo Alto, and Leo R. Barsotti, Pleasanton, Calif., and Robert B. Emerson, Baton Rouge, La., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

No Drawing. Filed Dec. 4, 1969, Ser. No. 882,283
Int. Cl. C01f *7/14*
U.S. Cl. 23—143 **9 Claims**

Fine particle size alumina hydrates, consisting essentially of a mixture of nordstrandite and bayerite, are made. The mixture is obtained by subjecting a sodium aluminate solution of high alumina and sodium hydroxide concentration to dilution under controlled conditions. The precipitated alumina hydrates consist essentially of a mixture of nordstrandite bayerite which, due to the fine particle size distribution and high surface area, provide an excellent catalyst base upon calcination. Thermal treatment of the mixture at elevated temperatures results in an activated alumina of essentially eta structure.

3,623,838

PROCESS FOR THE PRODUCTION OF LEAD OXIDES

Wilhelm Kunz, Cologne-Mulheim, and Walter Breckheimer, Bensberg, Germany, assignors to Lindgens & Sohne, Cologne-Mulheim, Germany

No Drawing. Filed Dec. 19, 1968, Ser. No. 785,386
Claims priority, application Austria, Jan. 3, 1968, A 71/68
Int. Cl. C01g *21/06, 21/10*
U.S. Cl. 23—146 **9 Claims**

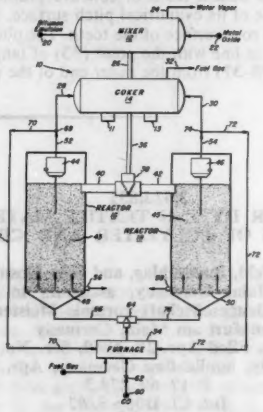
The red modification of lead oxide, which is convertible to Pb_3O_4 by oxidation at below about 500° C. or to the yellow modification of PbO by oxidation at above about 550° C., is produced. The raw oxide produced is in a highly reactive form having low abrasion and satisfactory free flowing properties and is free of added bonding agent. Production is effected by adding about 4 to 10% water to raw lead oxide particles containing less than about 30% metallic lead, the raw lead oxide not containing a substantial amount of particles of more than 20 microns diameter. The mixture of water and raw lead oxide is granulated, and the granules are dried.

3,623,839

METHOD OF MAKING ALKALINE EARTH METAL CARBIDE

Edmond L. d'Ouville, Evergreen Park, and Robert F. Marschner, Homewood, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Aug. 21, 1968, Ser. No. 754,365
Int. Cl. C01b *31/32*; F27b *15/00*
U.S. Cl. 23—208 **4 Claims**



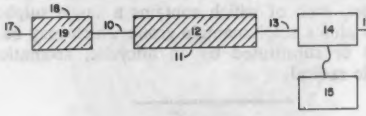
Calcium oxide is mixed with an aqueous bitumen emulsion to form a dry, powdery solid. This solid is then coked at a temperature between about 500° and 1500° C., and then heated in an inert atmosphere to a temperature between about 1500° and 1800° C. to form solid calcium carbide.

3,623,840

ANALYTICAL METHOD AND APPARATUS FOR ANALYSIS OF LABILE HYDROGEN CONTAINING COMPOUNDS

Royal H. Benson, Texas City, Tex., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 479,109, Aug. 12, 1965. This application Jan. 2, 1969, Ser. No. 788,432
Int. Cl. G01m *23/12*; G21h *5/00*
U.S. Cl. 23—230 R **26 Claims**



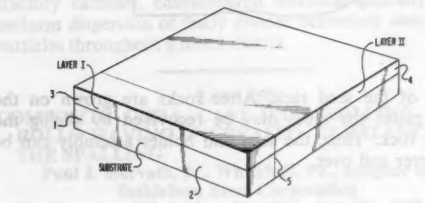
A method for analyzing for labile hydrogen in hydrogen-containing compounds in mixtures by passing the mixture over a tritium-containing substrate to effect exchange of said labile hydrogen with said tritium, detecting and measuring the radioactivity of the resulting tritium-containing compounds and using the radioactive measurement to determine the amount of the labile-hydro-containing compound in the mixture and an exchange column and system therefor.

3,623,841

SEPARATION BY THIN-LAYER CHROMATOGRAPHY WITH A TWO-LAYER PLATE

Friedrich Kraffczyk, Herbert Halpaap, and Roland Helger, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed July 15, 1969, Ser. No. 841,712
Claims priority, application Germany, July 19, 1968, P 17 92 083.1
Int. Cl. B01d *15/08;* G01n *31/04, 33/16*
U.S. Cl. 23—230 B 26 Claims



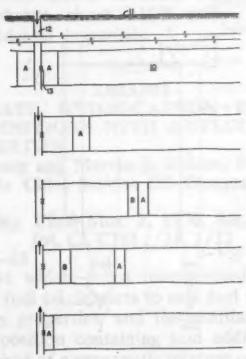
Thin-layer chromatographic plates are provided with two layers, one for the removal of interfering constituents and the other for the separation of amino acids.

3,623,842

METHOD OF DETERMINING FLUID SATURATIONS IN RESERVOIRS

Harry A. Deans, Houston, Tex., assignor to Esso Research Company

Filed Dec. 29, 1969, Ser. No. 888,668
Int. Cl. E21b *47/00;* G01n *33/24*
U.S. Cl. 23—230 EP 10 Claims



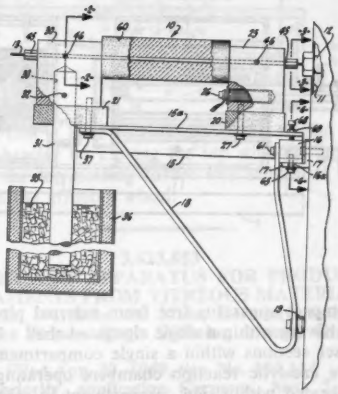
A method for determining the relative amounts of fluid phases in a subterranean oil-bearing formation in which one of the phases is mobile and the other is essentially immoble. A carrier fluid-reactant solution is injected into the formation by means of a well. The carrier fluid is substantially insoluble in the immoble fluid and miscible with the mobile fluid. The reactant forms at least two tracers within the formation, one of which may be unconsumed reactant. The tracers have different partition coefficients between the carrier fluid and immobile phase. After measurable quantities of the two tracers are produced by the reactant, the carrier fluid-tracer solution is displaced through the formation to a point of detection which preferably is the injection well. By applying the principles of chromatography to measured chromatographic properties of the process, the fluid saturations of the formation can be determined.

3,623,843

APPARATUS FOR CONDENSING ORGANIC VAPORS OF GAS CHROMATOGRAPHIC FRACTIONS

Robert G. Brownlee, East Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Sept. 10, 1969, Ser. No. 856,712
Int. Cl. B01n
U.S. Cl. 23—252 3 Claims



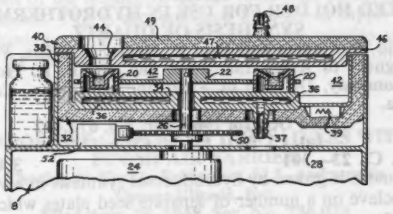
Apparatus for condensing and collecting microgram and larger amounts of organic vapors present in a gas chromatography effluent without engendering fog droplets. The apparatus comprises a length of small aluminum tubing adapted to receive an open-ended capillary or other glass tube into which the gas sample is passed for condensation, said aluminum tube being mounted at the sample receiving end in a heated aluminum block and, at the other end, in a refrigerated aluminum block spaced from the heated block, and with the intervening length of tubing between the blocks being thermally insulated so as to provide an even temperature gradient along said length ranging from vaporization to condensation temperatures. The organic vapors present in the sample directed into the glass tube are condensed therein, while any inert carrier components thereof are discharged from the open, downstream end of the tube.

3,623,844

INCUBATOR AND PROCESS TURNTABLE FOR CHEMICAL ANALYSIS APPARATUS FOR MICRO SAMPLES

Erik W. Anthon, Kensington, Calif., assignor to American Optical Corporation, Southbridge, Mass.

Filed July 17, 1969, Ser. No. 842,594
Int. Cl. B01f *3/12;* B01l *1/00;* G01n *31/00*
U.S. Cl. 23—253 2 Claims

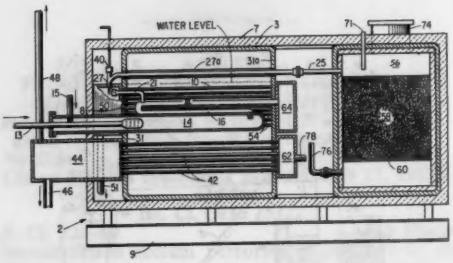


A serum sample incubator and process turntable in which samples are disposed in an insulated and humidity-controlled atmosphere and agitated as they are rotated and indexed relative to an analysis apparatus.

3,623,845
PACKAGE SULFUR PLANT

John W. Palm, Tulsa, Okla., assignor to Amoco Production Company

Filed Dec. 4, 1969, Ser. No. 882,072
Int. Cl. B01j 9/04; C01l 7/04; F27b 19/02
U.S. Cl. 23—262 9 Claims



A compact apparatus free from external piping is described having within a single elongated shell a boiler and condenser sections within a single compartment and one or more catalytic reaction chambers operating on feed gas preheated within said compartment to reaction temperature. An arrangement is described whereby a portion of the hot gas in the boiler section is mixed with the uncondensed gas from the discharge end of the condensing section to form a feed gas at the proper temperature for the reactor.

3,623,846
PARTICLE SIZE CONTROL

Arthur P. Haag, Moraga, and Meyer Weiner, Orinda, Calif., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed Dec. 12, 1969, Ser. No. 884,655
Int. Cl. B01j 17/26, 17/30; C01g 23/02
U.S. Cl. 23—294 12 Claims

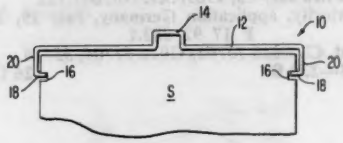
Method and apparatus for controlling particle size during condensation or desublimation of a material such as titanium trichloride is described. The technique involves injecting a vapor stream into an enlarged chamber maintained at a temperature below the condensation temperature of a material in the vapor stream. An inert gas is intermittently puffed through apertures in the enlarged chamber for buoying particles of material condensed from the vapor into the entering vapor stream so that additional material condenses thereon, thereby enlarging the particle size.

3,623,847
SEED HOLDER FOR USE IN HYDROTHERMAL SYNTHESIS OF QUARTZ

David W. Gehres and Paul L. Negley, Carlisle, Pa., assignors to Aiken Industries, Inc., % P. R. Hoffman Company, Division of Aiken Industries, Inc., Carlisle, Pa.

Filed Oct. 26, 1967, Ser. No. 678,442
Int. Cl. B01j 17/04; C01b 33/32
U.S. Cl. 23—301 3 Claims

Quartz is grown by hydrothermal synthesis in a vertical autoclave on a number of separate seed plates which may be of unequal length but which are held in seed racks having equally spaced tiers. The ends of each seed plate are provided with bent wire holders engaging slots in the sides of the seed plates and extending outwardly from the ends of the seed a variable distance so that each seed and holder assembly of a single tier is the same length to be accommodated in the equally spaced tier. The central portion of each wire holder is bent to form an outwardly extending projection to engage recesses in the tier

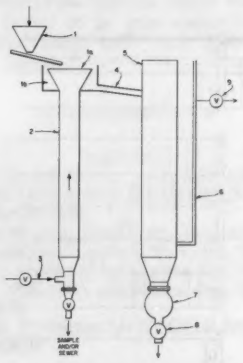


plates of the seed rack. After rocks are grown on the seeds plates the seeds may be recovered by slicing the grown rock. Thus, the seed and holder assembly can be used over and over.

3,623,848
PROCESS FOR BRINE MANUFACTURE

Harry Mueller Fisher, deceased, late of Gilbertsville, Ky., by Mary E. C. Fisher, administratrix, and Jesse Gyger Grier, Gilbertsville, Ky., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of abandoned application Ser. No. 559,214, June 21, 1966. This application Oct. 29, 1969, Ser. No. 871,796
Int. Cl. C01d 3/08; B01j 11/02
U.S. Cl. 23—312 3 Claims



A process for increasing the concentration of a depleted sodium chloride brine solution by introducing salt of about minus 6 U.S. sieve size and containing calcium sulfate as an impurity into the top of a vertical salt-bed free first column through which brine at a pH of above about 3.5 is flowing upwardly at a linear flow rate between about 15 and 25 feet per minute, the brine in the first column then overflowing into a second salt-bed free column where the linear downwardly flow rate is between about 0.1 and 3 feet per minute, whereby the salt particles are partially dissolved in the first column until they are carried over into the second column where they fall freely through the downwardly flowing brine solution until essentially completely dissolved at a point above a trap for undissolved calcium sulfate, thereby producing as effluent from the second column a concentrated brine solution low in calcium ion concentration.

3,623,849
SINTERED REFRACTORY ARTICLES OF MANUFACTURE

John Stanwood Benjamin, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 709,700, Mar. 1, 1968. This application Aug. 25, 1969, Ser. No. 852,816
Int. Cl. C22c *29/00*; B22f *9/00*
U.S. Cl. 29—182.8 8 Claims

This invention relates to the powder metallurgy of sintered refractory compound materials and also to a method for producing such materials, for example, cemented refractory carbides, characterized metallographically by a uniform dispersion of finely divided refractory compound particles throughout a metal matrix.

3,623,850
COMPOSITE CHILL CAST IRON ROLLING MILL ROLLS HAVING INCREASED RESISTANCE TO THE SPALLING

Paul J. Horvath, Jr., Whitehall, Pa., assignor to Bethlehem Steel Corporation
No Drawing. Filed Mar. 24, 1969, Ser. No. 810,025
Int. Cl. B32b *15/18*; C21d *9/38*
U.S. Cl. 29—196.1 4 Claims

A composite chill cast iron roll in which the chill area has a composition of about 3.20% to about 3.40% carbon, about 0.55% to about 0.65% manganese, about 1.45% to about 1.65% silicon, about 4.00% to about 4.40% nickel, about 0.90% to about 1.10% chromium, about 0.50% to about 0.70% molybdenum and about 0.03% to about 0.08% magnesium, about 0.07% phosphorus, about 0.02% sulfur, the remainder iron and incidental impurities and the core is a low alloy cast iron composition of about 3.40% to about 3.50% carbon, about 0.50% to about 0.60% manganese, about 1.25% to about 1.35% silicon, about 0.30% to about 0.50% chromium, about 0.75% to about 1.25% nickel, about 0.15% phosphorus, about 0.10% sulfur, the remainder iron and incidental impurities.

3,623,851
DISTILLATE HYDROCARBON FUEL OIL COMPOSITIONS WITH ANTI-CORROSION PROPERTIES

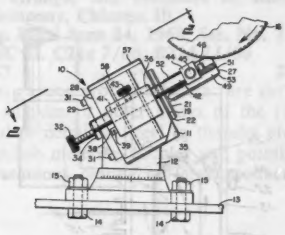
Robert J. Konig and Marvin S. Rakow, Brunswick, N.J., assignors to Cities Service Oil Company, New York, N.Y.
No Drawing. Filed Mar. 2, 1970, Ser. No. 15,913
Int. Cl. C10l *1/18, 1/22*
U.S. Cl. 44—63 13 Claims

An additive which, when incorporated in a distillate hydrocarbon fuel oil, imparts to said fuel oil composition anti-corrosion properties, and the distillate hydrocarbon fuel oil composition containing said additive. The additive is comprised of a synergistic mixture of (a) a diamide obtained by condensing one mole of a dicarboxylic acid with two moles of an N,N-dialkyl hydrocarbylenediamine and (b) a diamide obtained by condensing one mole of a dicarboxylic acid with one mole of a hydrocarbylenediamine having an aromatic hydrocarbon substituent on one amino nitrogen and one mole of a hydrocarbylenediamine wherein one of the amino nitrogens is part of a heterocyclic ring.

3,623,852
APPARATUS FOR GRINDING THREAD CUTTING TOOLS

Raymond P. Bushnell, Akron, Ohio
(200 Granger Road, Medina, Ohio 44256)
Filed Oct. 16, 1969, Ser. No. 866,868
Int. Cl. B24b *19/00, 7/00*
U.S. Cl. 51—225 7 Claims

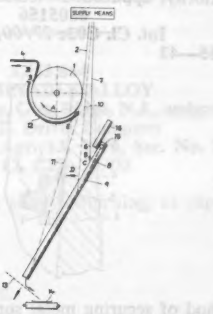
Apparatus for grinding thread cutting tools in which a tap holding fixture is mounted for movement in substantially the same plane as the plane of rotation of the grinding wheel and has a wheel dresser for shaping the periphery of the grinding wheel to a predetermined concave



radius so that a land of the tap can be ground with a selected chamfer by moving the tap with the land positioned in the tap holding fixture into tangential engagement with the grinding wheel.

3,623,853
METHOD AND APPARATUS FOR PRODUCING FILAMENTS FROM VITREOUS MATERIAL

Heinz Keib, Wertheim am Main, Germany, assignor to Schuller, Werner Hugo Wilhelm, Munich-Grunwald, Germany
Filed Aug. 29, 1969, Ser. No. 854,134
Claims priority, application Germany, Sept. 7, 1968, P 17 96 143.2
Int. Cl. C03b *37/02*
U.S. Cl. 65—2 15 Claims



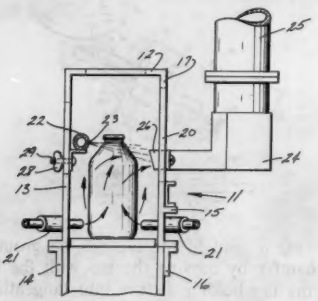
A drop of viscous molten vitreous material is exuded from an orifice communicating with a supply of such material. So exuded, the drop will descend under the influence of gravity while drawing behind it a length of filament of the vitreous material. The descending drop is contacted with a curtain of liquid which is being propelled transversely to the direction of descent at such velocity as to deflect, accelerate and sever the drop and proximal portions of the filament from the remainder of the length of filament. This is accomplished by a liquid supply conduit having a plurality of liquid ejecting nozzles which force the filaments into a rotary filament drawing surface.

3,623,854
VAPOR TREATMENT OF CONTAINERS WITH FINISH AIR BARRIER

Charles A. Frank, Bridgeton, N.J., assignor to Owens-Illinois, Inc.
Filed Aug. 28, 1968, Ser. No. 756,024
Int. Cl. C03c *15/00, 17/00*
U.S. Cl. 65—30 3 Claims

A treatment hood designed to be used in conjunction with a conveyor on which bottles or like articles are moved in succession through the hood. Tin chloride or

titanium chloride vapor is introduced into the hood at a point below the midpoint of the containers or articles to be coated and such treatment is prevented from impinging on the neck or finish of the container. A cross-



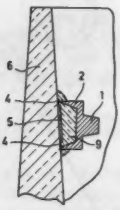
air barrier is directed across the width of the hood to sweep just below the neck of the container and be directed toward an exhaust system positioned along the length of the conveyor.

3,623,855

METHOD OF SECURING A METAL SUPPORTING MEMBER TO A GLASS WALL BY MEANS OF GLAZE

Albert Boon, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 3, 1969, Ser. No. 813,231
Claims priority, application Netherlands, Apr. 10, 1968, 6805156
Int. Cl. C03c *27/00, 29/00*
U.S. Cl. 65—43 **5 Claims**



A method of securing metal supporting members having cavities to inside glass surfaces of a cathode ray tube by grinding down the edges contiguous with the cavities at two opposite locations before filling the cavities with a suspension of a sealing glass. After drying, sintering and cooling the glass the members are placed in a jig for positioning each member so that the center lines for the two oppositely located sections that have been ground down extend along lines which are at right angles to the main strain lines in the glass where the member is to be located. The members are then pressed against the glass surfaces so that only the cavity edges that were not ground down contact the glass surfaces, and the entire assembly is then placed in an oven to liquefy the glass. The liquefied glass flows around the edges of the member and causes the members to adhere to the glass surfaces.

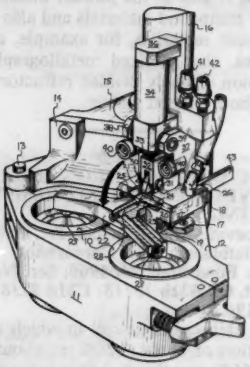
3,623,856

MOLD SPRAY APPARATUS

Robert H. Keller, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Feb. 2, 1970, Ser. No. 7,535
Int. Cl. C03b *39/00*
U.S. Cl. 65—169 **8 Claims**

Automatic lubrication spray of glass forming molds is accomplished by mounting a spray mechanism on one side of the mold, positioned so as to give clearance into the mold cavity for the charge of glass and the seating of baffles. The spray mechanism is controlled as to the quantity of spray which is sprayed into the molds by a selection of the precise spray nozzle. The application of the spray is carried out through the use of a pivoted arm which is motor driven to position the arm such that



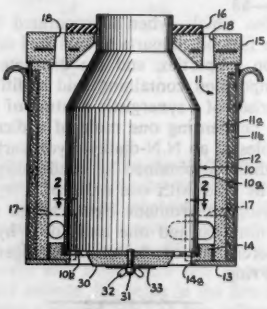
the spray nozzle carried by the arm is positioned above the mold in co-axial alignment with the vertical axis of the mold cavity at the time the lubricant is sprayed. The motor functions to move the arm into spray position and then to retract the arm out of the way to permit the other forming operations to be carried with respect to the glass which is introduced into the mold, normally at a time slightly after the spray has occurred.

3,623,857

GLASS MELTING POT

Norman Emerson McFadden, Defiance, Ohio, Walter Merton Perry, Darien, Conn., and Dennis Lee Ramge, Waterville, Ohio, assignors to Johns-Manville Corporation, New York, N.Y.

Filed Mar. 22, 1968, Ser. No. 715,371
Int. Cl. C03b *5/22*
U.S. Cl. 65—347 **5 Claims**



A glass melting pot of the type which has a multiplicity of apertures in the bottom thereof to permit the drawing of a multiplicity of continuous glass filaments therefrom. The main body of the pot is made of a high melting point nickel-chromium-iron base alloy, wherein iron is a minor constituent, and the apertures are fitted with tips made of one or more noble metals such as platinum.

3,623,858

METHOD OF PELLETIZING SERPENTINE CHRYSOTILE FINES AND PELLETED PRODUCTS THEREOF

Arthur Matthias Smith, Baltimore, Md., and William C. Streib, North Plainfield, N.J., assignors to Johns-Manville Corporation, New York, N.Y.

No Drawing. Filed Nov. 6, 1969, Ser. No. 874,685
Int. Cl. C05d 9/00
U.S. Cl. 71—62 6 Claims

A method of pelletizing serpentine chrysotile mineral fines with mineral acid, and the pelleted product of the action of the mineral acid with the serpentine chrysotile mineral.

3,623,859

PROCESS OF MAKING ACICULAR, STABLE MAGNETIC IRON PARTICLES

Frederick Thomas Aldridge, Belmont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

No Drawing. Filed May 22, 1970, Ser. No. 39,882
Int. Cl. C22b 5/12; C21c 15/00; B22f 9/00
U.S. Cl. 75—.5 AA 6 Claims

Acicular iron particles are made by doping an acicular ferric oxide with bismuth and reducing the doped oxide to iron at a relatively low temperature. The particles are stabilized by reoxidizing the surface slightly.

3,623,860

TUNGSTEN-RHENIUM ALLOY POWDER

Richard F. Cheney, Harry D. Martin, and Donald S. Parsons, Towanda, Pa., assignors to GTE Sylvania Incorporated

No Drawing. Filed Jan. 6, 1969, Ser. No. 789,363
Int. Cl. B22f 9/00; C22b 57/00
U.S. Cl. 75—.5 AB 5 Claims

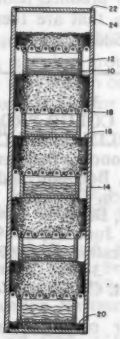
A particulate tungsten-rhenium alloy powder having an average particle size of from about 0.5 to about 4 microns and having an homogeneous distribution of tungsten and rhenium in each particle is disclosed. Additionally, a process for producing the tungsten-rhenium alloy powders is disclosed. The process comprises forming an aqueous solution of tungsten and rhenium sources, spray drying said solution and heat treating the resulting powder under controlled atmospheric and temperature conditions.

3,623,861

PRODUCTION OF METAL POWDERS

Alan Arias, Cleveland, Ohio, assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Aug. 28, 1969, Ser. No. 853,855
Int. Cl. B22f 9/00; C21b 15/02
U.S. Cl. 75—.5 B 8 Claims



Producing metal powders of controlled particle size by reducing oxides with the vapor of a reactive metal in a vacuum.

3,623,862

USE OF RARE EARTH ELEMENTS FOR REDUCING NOZZLE DEPOSITS IN THE CONTINUOUS CASTING OF STEEL PROCESS

Arthur F. Spengler, Jr., Park Forest, and William P. Young, La Grange, Ill., assignors to International Harvester Company, Chicago, Ill.

No Drawing. Filed June 24, 1968, Ser. No. 739,157
Int. Cl. C21c 7/06; B22d 11/00
U.S. Cl. 75—57 20 Claims

A continuous casting process wherein rare earth metals or rare earth silicides or other alloys of the rare earth metals are used to deoxidize steel to thereby prevent the clogging of tundish metering nozzles and permit the uninterrupted continuous casting of large production steel heats.

3,623,863

GAS POLING OF COPPER

James M. Henderson, New Brunswick, and Walter Johnson, South Plainfield, N.J., assignors to American Smelting and Refining Company, New York, N.Y.

Filed Nov. 21, 1967, Ser. No. 684,745
Int. Cl. C22b 9/08, 15/00, 15/14
U.S. Cl. 75—76 4 Claims

This application is concerned with a procedure for poling copper with natural gas. A pool of molten oxygen-bearing copper ready for poling is established in a substantially closed tilting furnace and the natural gas is injected into the pool beneath the molten surface of the metal at a rate which is sufficient to provide a positive pressure and at least about 2% methane, by volume on the dry basis, in the furnace atmosphere; such injection of the natural gas being continued until the oxygen content of the copper is reduced to a desired amount.

3,623,864

MACHINABLE ALLOY

George A. Majesko, Glen Ridge, N.J., assignor to Wilbur B. Driver Company

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,045
Int. Cl. C22c 19/00
U.S. Cl. 75—170 3 Claims

A freely machinable alloy comprising, as expressed in percent by weight:

Nickel: 50.0%–52.0%
Selenium: 0.1%–0.4%
Manganese: 0.5%–2.0%
Iron: Balance

ERRATA

For Classes 96—1.5 thru 260—606.5 OP see:
Patent Nos. 3,624,226 thru 3,624,260

3,623,865

PROCESSES FOR PRODUCING PHOTOGRAPHIC IMAGES UTILIZING LEUCOPHTHALOCYANINES AND PHOTOSENSITIVE MATERIALS AND PRODUCTS RELATED THERETO

Laura K. Case, Winchester, Mass., assignor to Itek Corporation, Lexington, Mass.

No Drawing. Filed Mar. 16, 1967, Ser. No. 623,534
Int. Cl. G03c 1/00, 5/04, 5/24
U.S. Cl. 96—27 45 Claims

This disclosure relates to an image reproduction system comprising a leucophthalocyanine and a photosensitive material, in which the photosensitive material becomes reversibly activated upon exposure to activating radiation but preferably remains essentially chemically unchanged after such exposure (hereinafter called a photoconductor). A leucophthalocyanine is a material which is known to the art to be capable of being reduced to a phthalocyanine dye. A negative image from

an original is produced by either of two methods: (1) exposing a substrate comprising (a) a leucophthalocyanine and (b) a photoconductor, to an image pattern of activating radiation, and (2) exposing a photoconductor containing substrate to an image pattern of activating radiation and subsequently contacting said exposed substrate with a leucophthalocyanine. A positive photographic print is produced from an original with only one exposure by contacting the negative print of processes such as described above with a suitable receptive substrate. The leucophthalocyanine from the unexposed areas of the negative print is thereby transferred to the receptive substrate and then a positive image is developed on the receptive substrate. Acid catalysis is preferably used in the above-described processes to improve photographic speed. It has also been found that a very short exposure to one wavelength of activating radiation, e.g., ultraviolet light, will activate the photosensitive substrate comprising a leucophthalocyanine and a photoconductor so that the photosensitive substrate is now sensitive to different wavelengths of radiation to which the substrate is ordinarily not sensitive, e.g. visible light. Therefore, a very brief exposure of this photosensitive substrate to an image pattern of activating radiation may be followed by a flooding of such substrate to visible light to produce a visible image.

3,623,866

STABILIZATION OF PHOTOCHROMIC COPY

Alexander Averbach, Skokie, Ill., assignor to A. B. Dick Company, Niles, Ill.

No Drawing. Filed Nov. 1, 1968, Ser. No. 772,800
Int. Cl. G03c *5/24*
U.S. Cl. 96—48 **4 Claims**

The stabilization of copy produced by exposure of a photochromic layer formed of heteropoly acids of molybdenum and tungsten and a reducing agent wherein the layer after exposure is wet with an aqueous alkaline solution of an alkaline material.

3,623,867

PHOTOGRAPHIC METHOD FOR PRODUCING A CATHODE RAY TUBE SCREEN STRUCTURE

Theodore Alexander Saulnier, Lancaster, Pa., assignor to RCA Corporation

No Drawing. Filed Oct. 6, 1969, Ser. No. 864,197
Int. Cl. G03c *5/00, 7/06*
U.S. Cl. 96—36.1 **10 Claims**

A process for preparing a luminescent screen structure of a cathode ray tube comprising

(1) coating a supporting surface such as the inner surface of the faceplate of the tube, with a photosensitive polymeric film containing 0.06 to 0.50 weight part, light scattering particles per part polymeric material,
(2) exposing the film to a light image,
(3) removing the still soluble portions of the film,
(4) overcoating the retained film portions with a layer containing particles of screen structure material
(5) and then removing the retained film portion and overcoating thereon.

3,623,868

GELABLE PHOTOPROCESSING SOLUTIONS

Alvin Cronig, Shaker Heights, Ohio, assignor to Itek Corporation, Lexington, Mass.

No Drawing. Continuation-in-part of application Ser. No. 757,114, Sept. 3, 1968. This application Dec. 17, 1969, Ser. No. 886,002
Int. Cl. G03c *5/24, 5/38*
U.S. Cl. 96—48 **13 Claims**

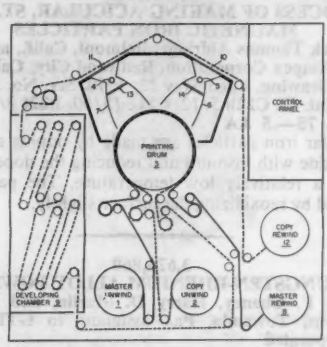
Gelable photoprocessing solutions are disclosed which comprise a photoprocessing solution and an amount of a heat-reversible gel forming mixture of xanthan gum and locust bean gum sufficient to cause gelation of the solution. These solutions are easily gelled, in which state they are useful for developing, fixing, washing, etc. exposed photographic films.

3,623,869

METHOD FOR IMAGING DIAZOSULFONATE PHOTOREPRODUCTION MATERIALS

Robert S. Allard, Chicopee Falls, Mass., assignor to The Plastic Coating Corporation, South Hadley, Hampshire County, Mass.

Filed Oct. 27, 1969, Ser. No. 869,483
Int. Cl. G03c *1/56, 5/00*
U.S. Cl. 96—49 **2 Claims**



Disclosed are a process for forming images in reversal diazosulfonate photoreproduction material at elevated temperature, and means for maintaining the material at elevated temperature during the imaging step.

3,623,870

TECHNIQUE FOR THE PREPARATION OF THERMALLY STABLE PHOTORESIST

Robert K. Curran, Stirling, Michael R. Goldrick, East Orange, and Robert E. Kerwin, Westfield, N.J., assignors to Bell Telephone Laboratories, Incorporated. Murray Hill, N.J.

No Drawing. Filed July 22, 1969, Ser. No. 843,779
Int. Cl. G03c *1/58*
U.S. Cl. 96—49 **8 Claims**

A thermally stable photoresist is obtained by reacting a polyamic acid with a dichromate photosensitizer, exposing the resultant product to a light source, developing with a 1-methyl-2-pyrrolidinone-solvent mixture and baking the resultant composition. The resultant photoresist may be used to produce photolithographic images with resolutions of 2μ that are thermally stable at temperatures in excess of 500° C.

3,623,871

PHOTOGRAPHIC COLOR PROCESS UTILIZING 2-PYRAZOLIN-5-ONE COUPLERS

Raphael Karel van Poucke, Berchem, and Marcel Jacob Monbaliu, Mortsel, Belgium, and Hans Glockner and Ernst Meier, Munich, Germany, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed June 27, 1969, Ser. No. 837,300
Claims priority, application Great Britain, July 18, 1968, 34,340/68
Int. Cl. G03c *1/40*
U.S. Cl. 96—56.5 **8 Claims**

Photographic color material comprising in a light-sensitive silver halide emulsion layer or in a non-light-sensitive water-permeable colloid layer in water-permeable relationship with the said emulsion layer a magenta-forming color coupler of the 2-pyrazolin-5-one type

wherein said color coupler contains in the 1-position a phenyl group carrying at least one haloalkyloxy group, haloalkylthio group or haloalkylsulphonyl group. The photographic color materials as a result of the select color coupler have narrow spectral absorption curves and, therefore, show little side absorption in the undesirable regions of the spectrum and, additionally, have good moisture and light stability.

3,623,872

STABILISATION OF DEVELOPED PHOTOGRAPHIC IMAGES

Werner Berthold, Kiel, and Anita von König, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 16, 1970, Ser. No. 33,115
Claims priority, application Germany, Apr. 29, 1969, P 19 21 740.0
Int. Cl. G03c *5/38, 5/30, 1/06*
U.S. Cl. 96—61 **4 Claims**

Exposed and developed photographic silver images can be stabilised by treating the layer containing the exposed image with a compound which reacts with the silver halide in the unexposed and undeveloped areas of the layer to form a light-insensitive reaction product. Fading of the silver images thus produced is prevented by performing the development in the presence of heterocyclic carboxyl-alkyl mercapto compounds.

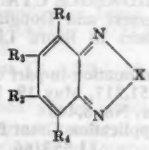
3,623,873

DEVELOPMENT PROCESS IN PRESENCE OF A NITRO-SUBSTITUTED BENZOTHIADIAZOLE OR BENZOSELENADIAZOLE

John Colin Brown and Roy Anthony Cheer, Ilford, England, assignors to Ilford Limited, Ilford, Essex, England

No Drawing. Filed June 25, 1970, Ser. No. 49,902
Claims priority, application Great Britain, June 26, 1969, 32,425/69
Int. Cl. G03c *5/30, 1/34*
U.S. Cl. 96—66.5 **5 Claims**

This application describes a process for the production of a photographic record which comprises developing photographic material having a gelatino silver halide emulsion containing a developable silver image in a silver halide developing solution the process being characterised in that it takes place in the presence of a compound of the formula:



where X represents a sulphur or selenium atom, at least one of R_1, R_2, R_3 or R_4 is a nitro group and the remainder are each selected from a hydrogen or a halogen atom, or an alkyl, aralkyl, alkoxy, mono- or di-alkylamino, acylamino or a nitro group.

3,623,874

PHOTOGRAPHIC LIGHT-SENSITIVE SILVER HALIDE MATERIAL CONTAINING DISAZO DYES

Alfred Froehlich, Marly-le-Grand, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Filed Apr. 2, 1969, Ser. No. 812,866
Claims priority, application Switzerland, Apr. 8, 1968, 5,167/68
Int. Cl. G03c *1/10*
U.S. Cl. 96—73 **10 Claims**

Photographic material for the silver dye bleaching process containing cyan dyestuffs of this constitution: [1,8-aminohydroxy- or 1,8-dihydroxy-naphthalene-mono- or disulfonic acid radical]—N=N-p-benzene radical—N=N—[radical of a 2-hydroxy-3-naphthoic acid arylamide containing at least one water solubilizing group in the aryl radical]. These dyestuffs have a very low absorption in the blue and green spectral regions, are fast to diffusion, are well soluble, are stable towards cations, are fast to light and are easy to bleach.

3,623,875

BACKGROUND COLORATION INHIBITION IN DIAZOSULFONATE PHOTOREPRODUCTION

Robert Charles Desjarlais, South Hadley Falls, Mass., assignor to The Plastic Coating Corporation, South Hadley, Mass.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,902
Int. Cl. G03c *1/56, 1/60*
U.S. Cl. 96—91 **6 Claims**

Inclusion of a neutral salt of an aromatic sulfinic acid in a reversal diazosulfonate photosensitive composition prevents background coloration.

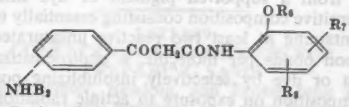
3,623,876

SILVER HALIDE EMULSIONS CONTAINING YELLOW-FORMING COLOR COUPLERS

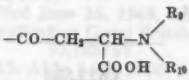
Francis George Hunt, Marsh, England, assignor to Ilford Limited, Ilford, Essex, England

No Drawing. Filed Apr. 30, 1970, Ser. No. 33,486
Claims priority, application Great Britain, May 1, 1969, 22,354/69
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **2 Claims**

This application describes a yellow color coupler of the formula:



wherein B_2 is a ballasting group of the general formula:



wherein R_9 is an acyl group and R_{10} is an alkyl, cycloalkyl, aralkyl, aryl or substituted aryl group, R_6 is alkyl, aralkyl, aryl or substituted alkyl, aralkyl and aryl and R_7 and R_8 are each selected from alkyl, aralkyl, aryl, alkoxy, aralkoxy, aryloxy, halogen, hydrogen, sulphonamide, substituted sulphonamide or acylamide but not more than one of R_7 or R_8 is hydrogen.

3,623,877

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS CONTAINING ALKALINE EARTH METAL SALTS OF COLOR COUPLERS

Richard Kenneth Langley, Brentwood, and James Arthur Townsley and Roy Trunley, Ilford, England, assignors to Ilford Limited, Ilford, Essex, England

No Drawing. Filed July 18, 1969, Ser. No. 843,175
Claims priority, application Great Britain, July 24, 1968, 35,339/68
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **4 Claims**

This application describes a process for the incorporation into a gelatino silver halide emulsion of a color coupler containing a carboxylic acid group which is characterised in that it comprises reacting an alkali metal salt of the color coupler with a water-soluble alkaline earth metal salt or magnesium salt in the presence of gelatin or a colloid medium compatible with gelatin to form a dispersion of the color coupler in the colloid medium and incorporating the said dispersion in the gelatino silver halide emulsion.

3,623,878

SILVER HALIDE EMULSION CONTAINING COPOLYMER OF GLYCIDYL METHACRYLATE AND VINYL MONOMER AS HARDENER

Fumihiko Nishio, Nobuo Tsuji, Kinji Ohkubo, Kotaro Yamasue, and Tatsuya Tajima, Minami Ashigara-machi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-machi, Japan

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,627
Claims priority, application Japan, Mar. 28, 1968, 43/20,260
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 19 Claims

A photographic light-sensitive element comprising at least one gelatin layer wherein the gelatin layer contains an aqueous solution or dispersion of a copolymer of glycidyl methacrylate or glycidyl acrylate, and a vinyl monomer. The copolymer lends enhanced hardening properties to the gelatin.

3,623,879

PROCESS OF FORMING A CONTINUOUS TONE PHOTOGRAPHIC IMAGE

Arthur D. Ketley, Clifton L. Kehr, and Jennie Lee Touchette, Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Oct. 11, 1968, Ser. No. 766,948
Int. Cl. G03c *1/68*
U.S. Cl. 96—115 21 Claims

This invention is directed toward forming a silverless continuous tone photographic image having a scale index between 0.5 and 1.5 and a gamma of 0.5–1.5 (see "Kodak Notes on Practical Densitometry," Pamphlet No. E59, pp. 1–17, Eastman Kodak Co., Rochester, N.Y., for definitions), from a supported pigment or dye filled liquid photosensitive composition consisting essentially of a polyene containing at least two reactive unsaturated carbon to carbon bonds per molecule, a photosensitizer and a pigment or dye by selectively insolublizing portions of the composition on exposure to actinic radiation and removing the unexposed liquid portion of the composition from the support.

3,623,880

METHOD OF DYEING PHOTOSENSITIVE POLYMERS AND MATERIALS SO DYED

Joseph L. Sannella and John F. I. Sharp, Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

No Drawing. Filed Dec. 20, 1968, Ser. No. 785,797
Int. Cl. G03c *1/68*
U.S. Cl. 96—115 R 22 Claims

A method of dyeing photosensitive polymeric materials in nonpolar solvents with water-soluble dyes by including a polar solvent, whereby the dye and polymer remain dispersed upon evaporation of the solvent, the polymer remains accurately photosensitive, and the dye is not leached from the light-struck portion of the polymer in strong developing solvents, a photosensitive polymer dyed with acid violet dye, and graphic arts plates coated with such dyed photosensitive polymer.

3,623,881

SILVER HALIDE EMULSIONS SENSITIZED WITH TRICARBOCYANINE DYES CONTAINING A 1-PIPERAZINYL GROUP

Arthur Fumia, Jr., Hilton, and Leslie G. S. Brooker, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 860,395, Sept. 23, 1969. This application Mar. 25, 1970, Ser. No. 22,708
Int. Cl. G03c *1/10*
U.S. Cl. 96—127 9 Claims

Novel tricarbocyanine dyes are provided having a 1-piperazinyl group group attached to the meso carbon atom of the methine linkage of the dye. Light sensitive silver halide grains are spectrally sensitized with the tricarbocyanine dyes of this invention.

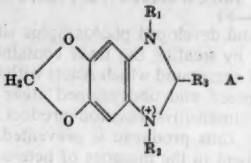
3,623,882

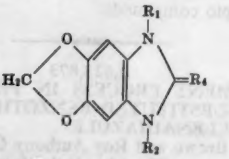
BENZIMIDAZOLE DERIVATIVES AND THEIR USE IN PHOTOGRAPHY

Johannes Götze, Bergstrasse-Neukirchen, Germany, and Henri Depoorter, Mortsel, and Theophiel Hubert Ghys, Kontich, Belgium, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 6, 1969, Ser. No. 864,199
Claims priority, application Germany, Oct. 26, 1968, P 18 05 548.6
Int. Cl. G03c *1/14*; C09b *23/02*; C07d *49/38*
U.S. Cl. 96—137 2 Claims

A substituted benzimidazole compound for photographic silver halide emulsions is provided in a compound according to the following general formulae:

I 

II 

in which
R_1 is an alkyl group;
R_2 is a saturated or unsaturated aliphatic group;
R_3 is a methyl or methylthio group or a methine chain;
R_4 is one of the usual cyclic ketomethylene radicals of cyanine chemistry;
A^- is any anion, A being absent if R_2 contains an acid group in which case a betaine structure is present.

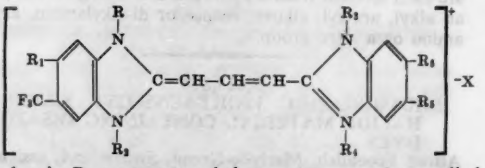
3,623,883

SILVER HALIDE EMULSION CONTAINING BENZIMIDAZOLE CYANINE DYES

Konrad Jerzy Bannert and Douglas James Fry, Ilford, England, assignors to Ilford Limited, Ilford, Essex, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 551,217, May 19, 1966. This application Feb. 3, 1970, Ser. No. 8,443
Claims priority, application Great Britain, Mar. 16, 1966, 11,553/66
Int. Cl. G03c *1/10*
U.S. Cl. 96—137 1 Claim

Cyanine dyes of the general formula:



wherein R_1 represents a halogen atom or a lower alkyl or amine group, R and R_3 are the same or different and represent lower alkyl groups, R_2 and R_4 are the same or different and represent alkyl, hydroxyalkyl, aralkyl, carboxy-substituted aralkyl, carboxy-substituted alkyl, a group $-(CH_2)_nSO_3H$ wherein *n* is an integer from 1 to 6, an acylsulphonamido alkyl group of the formula $-(CH_2)_nSO_2NHCOR_8$ where *n* is an integer from 1 to 6

and R_8 is an alkyl group, or an alkyl or aralkyl sulphonamido alkyl group of the formula $-(CH_2)_nSO_2NHR_9$ where n is an integer from 1 to 6 and R_9 is an alkyl or aralkyl group, R_5 represents a hydrogen or a halogen atom or an alkyl or amino group, R_6 represents a hydrogen or halogen atom or a trifluoromethyl, cyano or alkoxycarbonyl group, except that when R_1 and R_5 each represent a chlorine atom and R_6 represents a trifluoromethyl group R_2 and R_4 do not represent the same alkyl group. A process for production of the dyes and a photographic gelatino silver halide emulsion containing them are also disclosed.

3,623,884

ANIMAL FOOD PRODUCTS

Gerhard J. Haas, Woodcliff Lake, N.J., assignor to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed May 22, 1969, Ser. No. 827,030
Int. Cl. A23k *1/16*
U.S. Cl. 99—2 AB 1 Claim

This invention relates to the use of levulinic acid in combination with potassium sorbate as an antimycotic to preserve meat and meat-like animal foods which are characterized by high degrees of palatability, nutrition and caloric value.

3,623,885

EXTRUSION OF PROTEINACEOUS MATERIALS

Mokhtar M. Hamdy, Minneapolis, Minn., assignor to Archer Daniels Midland Company, Minneapolis, Minn.

No Drawing. Filed Dec. 13, 1968, Ser. No. 783,731
Int. Cl. A23j *1/14*
U.S. Cl. 99—17 6 Claims

In the extrusion of meat substitute products from oil seed proteinaceous materials, the extrusion of compositions containing up to about 5% fat is improved by the addition of small amounts of finely divided α-cellulose to the extrusion mix. By this means, the fat can be more economically introduced prior to extrusion rather than in a post extrusion step.

3,623,886

AMINO ACID-ENRICHED GRAINS AND PROCESS OF PREPARATION

Hisateru Mitsuda, Kyoto, Japan, assignor to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed May 19, 1969, Ser. No. 825,503
Claims priority, application Japan, May 20, 1968, 43/33,885, 43/33,886, 43/33,887; Aug. 24, 1968, 43/60,799
Int. Cl. A23l *1/10*
U.S. Cl. 99—83 15 Claims

Amino acid-enriched grains resistant to the loss of amino acid by washing are produced by treating the grain (such as polished rice) with an aqueous or acidic solution of amino acid, soaking or spraying the amino acid-enriched grain with dibenzoylthiamine, cetyl-B_1 or thiamine naphthalene-2,6-disulfonic acid, steaming so as to gelatinize the surface layer of the grain and then drying. Preferred enriching amino acids are lysine and threonine.

3,623,887

FLOUR MIXES AND BAKED PRODUCTS CONTAINING FATTY ALCOHOL-ENHANCED EMULSIFICATION MIXTURES

Bruce D. Buddemeyer, Kansas City, Mo., Melvin S. Fish, Bethesda, Md., and David Philip Leonard, Overland Park, and Hubert H. Miers, Shawnee Mission, Kans., assignors to The Paniplus Company, Kansas City, Mo.

No Drawing. Filed Apr. 3, 1968, Ser. No. 718,380
Int. Cl. A21d *2/16*
U.S. Cl. 99—91 21 Claims

There are disclosed flour mixes for preparing baked flour products wherein the quality of the resulting baked product is enhanced by an emulsification composition consisting of a mixture of at least one fatty alcohol having from about 12 to 24 carbon atoms and one or more of three different types of aliphatic ester constituents which are (a) an acyl lactylic acid type ester; (b) a fatty alcohol mono-ester of an aliphatic dicarboxylic acid; (c) an ester constituent (i) of a mono- to di-fatty acid ester of an aliphatic alcohol, (ii) a polyoxyalkalene derivative of these type (i) esters, or (iii) any of the succinylated, lactylated or acetylated derivatives of the type (i) esters; and (d) mixtures of any of these three different types of ester constituents; and with the fatty alcohol being present in the emulsification composition to the extent of from about 1% of to about equal to the weight of the ester constituent.

3,623,888

STABLE LIQUID SHORTENING AND METHOD OF PRODUCING SAME

Edward J. Reid, Brea, Calif., assignor to Hunt-Wesson Foods, Inc., Fullerton, Calif.

No Drawing. Continuation-in-part of application Ser. No. 660,181, Aug. 14, 1967. This application Apr. 24, 1970, Ser. No. 31,770
Int. Cl. A23d *5/00*
U.S. Cl. 99—118 18 Claims

A true pourable, liquid shortening which remains clear down to temperatures of about 60° F. and produces high and stabilized consistent volume baked goods irrespective of prebaking batter temperature is prepared by combining a liquid triglyceride oil, a crystal inhibitor and an emulsifying amount of an acyl lactylic acid mixture, a fatty acid mono-diglyceride and a free saturated fatty acid, containing 16 to 22 carbon atoms.

3,623,889

CONFECTION AND PROCESS FOR PREPARING SAME

Roderick Falconer, Reading, and Ernest John Hughes, Hitchin, England, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed June 26, 1968, Ser. No. 740,840
Claims priority, application Great Britain, June 29, 1967, 30,168/67
Int. Cl. A23g *1/00, 3/00, 5/00*
U.S. Cl. 99—134 18 Claims

Particles of fat containing effervescent material are dispersed in water ices and ice cream for release of effervescence when the ice and fat melt on consumption.

3,623,890

FROZEN FOOD CONFECTION AND METHOD FOR MANUFACTURE THEREOF

Robert B. Klein, Des Plaines, Ill., assignor to Kraftco Corporation, New York, N.Y.

No Drawing. Filed Apr. 1, 1968, Ser. No. 717,959
Int. Cl. A23g *5/00*
U.S. Cl. 99—136 4 Claims

A food composition is provided which is suitable for freezing to provide a frozen confection. The food composition comprises a crystal conditioning agent selected from mixtures of glycerin and propylene glycol. The crystal conditioning agent is provided at a level sufficient to attain a desirable soft, non-brittle, almost pliable structure in the food composition when the food composition is frozen.

3,623,891

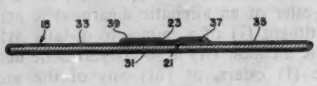
PACKAGE AND METHOD FOR FORMING SAME

Frank O. Coffey, Glenview, Ill., assignor to Kraftco Corporation, New York, N.Y.

Filed Mar. 28, 1969, Ser. No. 811,347
Int. Cl. B65b *25/06*
U.S. Cl. 99—178 11 Claims

A package for cheese is provided from metal foil wrapping material which has been coated on at least one of

its larger surfaces with a material which is corrosion resistant. The package is formed so that the lowermost edge portion of the package is turned under to provide a cuff.



The package is particularly adapted for wrapping cheese. The coating is preferably acid-impervious and is also preferably a thermoplastic material that can be heat sealed to itself at appropriate locations.

3,623,892
METHOD OF PREPARING A FROZEN FOWL PRODUCT
Carl H. Koonz, Downers Grove, and Eldon J. Strandine, Chicago, Ill., assignors to Swift & Company, Chicago, Ill.
Continuation-in-part of application Ser. No. 602,709, Dec. 19, 1966. This application Aug. 11, 1969, Ser. No. 871,394
Int. Cl. A22c *21/00;* **A23b** *1/06*
U.S. Cl. 99—194 **9 Claims**

A frozen poultry product is prepared in a manner which enables easy access to the body cavity of the poultry without the necessity of defrosting. The posterior opening of an eviscerated fowl is maintained in a dilated position by inserting a tube therein, which tube may contain giblets, and through which the fowl cavity may be stuffed.

3,623,893
PRESSURE INFUSION FOOD STABILIZATION
Conrad E. Mauge, New Rochelle, N.Y., assignor to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed Sept. 10, 1968, Ser. No. 758,686
Int. Cl. A23b *1/04, 7/02*
U.S. Cl. 99—204 **4 Claims**

Using superatmospheric pressure to infuse a food with solution of stabilizing solutes, while attaining a moisture reduction to a more stable level, foreshortens the requisite period for treatment and effects a more uniform treatment with fewer changes in food texture.

3,623,894
TREATING MILK
Ernst-Gunnar Samuelsson, Lund, Sweden, assignor to Food Innovation AB, Norrkoping, Sweden
No Drawing. Filed Dec. 17, 1968, Ser. No. 784,465
Claims priority, application Sweden, Dec. 21, 1967, 17,566/67
Int. Cl. A23c *3/02*
U.S. Cl. 99—212 **3 Claims**

Off-flavor development caused by heating milk is prevented by adding to the milk a compound which dissociates to provide oxidizing ions containing a halide.

3,623,895
METHOD OF PREPARING WATER-REPELLENT MOLDED ARTICLES FROM INORGANIC MATERIALS
Siegfried Nitzsche, Ewald Pirson, and Michael Roth, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany
No Drawing. Filed Nov. 1, 1968, Ser. No. 772,815
Claims priority, application Germany, Nov. 3, 1967, P 16 71 281.5
Int. Cl. C09k *3/18*
U.S. Cl. 106—2 **2 Claims**

Emulsions of mixtures of monomethylpolysiloxane and dimethylpolysiloxane are added to inorganic materials which cure upon addition of water to improve the water repellency of the ultimate cured product.

3,623,896
MARINE ANTIFOULANT WITH COPPER, COBALT OR MANGANESE TEREPHTHALATE
Hans A. Leipold, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.
No Drawing. Filed June 15, 1967, Ser. No. 646,203
Int. Cl. C09d *5/14*
U.S. Cl. 106—15 **1 Claim**

Compositions of matter including cobalt, copper, and maganese salts of terephthalic acid, the cobalt, copper, and manganese having a valence of two for use as marine antifoulants.

3,623,897
NOVEL FOAMABLE GLASS COMPOSITIONS COMPRISING COPPER
Gerald E. Wojcik, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed June 16, 1969, Ser. No. 833,648
Int. Cl. C03c *3/04*
U.S. Cl. 106—54 **3 Claims**

The invention pertains to novel sinter glass and foam glass made from an intimate blend of a copper glass and a brosilicate glass.

3,623,898
INTERIOR PLASTER COATING COMPOSITION
Nicholas A. Limberis, Bonita Springs, Fla., assignor to Durable-Dri-Hard-Wall, Inc., Miami, Fla.
No Drawing. Filed Oct. 9, 1969, Ser. No. 865,170
Int. Cl. C04b *11/10, 11/12*
U.S. Cl. 106—109 **4 Claims**

A dry plaster composition for use as an interior surface coating comprising 33–38 weight percent gypsum, 7.5–10 weight percent quicklime, 45–55 weight percent silica and 1.25–2.50 weight percent white portland cement.

3,623,899
IMINE MODIFIED CARBON BLACK COMPOUND FOR LOW FRICTION COMPOSITES
Paul Lagally, Annapolis, Md., assignor to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Oct. 29, 1969, Ser. No. 872,382
Int. Cl. C08h *17/08;* **C09c** *1/56*
U.S. Cl. 106—307 **6 Claims**

A cyclic imine and carbon black compound is provided which can be used as a reinforcing agent for a polyolefin material.

3,623,900
METHOD OF FACING TIRES WITH COLORED SIDEWALLS
Nelson Jonnes, Stillwater, and Robert J. Huberty, Mendota Heights Township, Dakota County, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Jan. 10, 1969, Ser. No. 790,468
Int. Cl. B44c *1/08;* **B44d** *1/092*
U.S. Cl. 117—9 **5 Claims**

A method for forming tire sidewall facings by applying a liquid coating material in a recess formed in the tire and allowing the coating material to cure. The coating material comprises an epoxy resin and curing agent reactive with an epoxy resin, which react together to form

a durable elastomeric material having high adhesion to vulcanized tire rubber.

3,623,901

FORMATION OF CHROMIUM-CONTAINING COATINGS ON BOTH SIDES OF STEEL STRIP WITH ONE COATED SIDE HAVING A BRIGHT FINISH

Julius V. D. Forstmann, Allentown, and Richard M. Willison, Bethlehem, Pa., assignors to Bethlehem Steel Corporation

Filed Nov. 18, 1968, Ser. No. 777,550
Int. Cl. C23c *9/00, 11/04*
U.S. Cl. 117—22 20 Claims

In a method of forming a chromium-containing coating on steel strip, a chromium-containing powder is applied uniformly to one side of the strip and compacted thereon. The thus-prepared strip is coiled and diffusion treated in a protective atmosphere, preferably of hydrogen, and including a halogen-containing gas at a temperature and for a time sufficient to form a stainless steel coating on both sides of the strip.

3,623,902

METHOD OF MOVING A WORKING STATION WITH REFERENCE TO A SUBSTANTIALLY VERTICAL SURFACE

Paul Hammelmann, 17 Zum Sundern, 474 Oelde, Westphalia, Germany

Filed Feb. 26, 1969, Ser. No. 803,126
Claims priority, application Germany, Feb. 28, 1968, P 15 56 454.2
Int. Cl. B08b *3/02;* B05c *5/00*
U.S. Cl. 117—104 R 3 Claims

Method and arrangement for moving a working station with reference to a substantially vertical surface, particularly the external surface of a ship hull. A vehicle is advanced in a horizontal path adjacent to and along the surface and a working station, movably supported on the vehicle, is simultaneously moved in a substantially vertical path with reference to the travelling vehicle between an upper and a lower end position whereby it moves along a substantially vertical strip of the surface. On reaching one or the other of its end positions, the working station is rapidly shifted in the direction of advancement of the vehicle and thereupon again moved in a substantially vertical path with reference to the travelling vehicle along another substantially vertical strip of the surface which is directly adjacent to but does not overlap over the first vertical strip.

3,623,903

METHOD FOR PRODUCING LIGHT-CONDUCTING SYSTEMS, PARTICULARLY FOR ULTRAVIOLET LIGHT

Helmut Dislich, Mainz-Gosenheim, and Alfred Jacobsen, Mainz, Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz, Germany

No Drawing. Continuation of application Ser. No. 640,514, May 23, 1967. This application May 12, 1970, Ser. No. 36,696
Claims priority, application Germany, June 8, 1966, J 31,023
Int. Cl. C03c *25/02;* G02 *1/10*
U.S. Cl. 117—124 E 2 Claims

Light conducting systems, particularly for ultraviolet light are produced by coating quartz glass rods and fibres with a synthetic resin having an index of refraction which is smaller than the material to be coated; the synthetic resin comprising a transparent, highly fluoridized, aliphatic synthetic substance, preferably a mixed-polymerizate made from tetrafluoroethylene and hexafluoropropylene.

3,623,904

ELASTOMERIC COMPOSITION CONTAINING SILICON CARBIDE FOR USE AS AN ABLATIVE COATING

James A. Ramseyer, Linwood, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 669,307, Sept. 20, 1967, which is a continuation-in-part of application Ser. No. 600,066, Dec. 9, 1966. This application Feb. 10, 1969, Ser. No. 798,188
Int. Cl. B32b *15/08, 27/20;* B44d *1/36*
U.S. Cl. 117—135.1 7 Claims

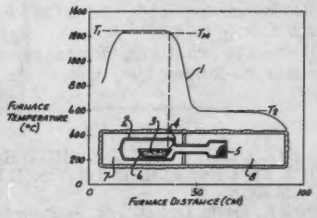
A method for protecting the surface of aerospace vehicles from the eroding effects of turbulent gases and extremely severe temperatures which method consists of coating the surface of the vehicle with an organosiloxane elastomer which has included therein specific quantities of powdered silicon carbide, silica and a high temperature decomposing fiber which melts at a temperature above 3000° F.

3,623,905

GALLIUM COMPOUNDS WITH REDUCED SILICON CONTAMINATION AND A METHOD OF MANUFACTURING THEM

Shinichi Akai, Toyonaka, and Takashi Shimoda, Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 4, 1969, Ser. No. 873,783
Claims priority, application Japan, Nov. 6, 1968, 43/81,104; Nov. 27, 1968, 43/87,143; July 24, 1969, 44/58,563; July 29, 1969, 44/60,182
Int. Cl. B44d *1/02, 1/18;* H01l *7/36*
U.S. Cl. 117—201 11 Claims



This invention relates to a method of manufacturing gallium compounds such as GaAs, GaP, $Ga_{1x-x}In_xAs$, $Ga_{1-x}Al_xAs$, $GaAs_{1-x}P_x$ and $Ga_{1-x}In_xP$, with a reduced level of silicon contamination, x being a number ranging

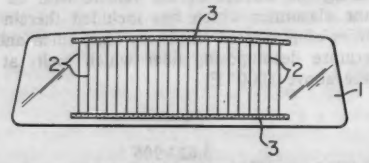
from 0 to 1, inclusive of 0 and exclusive of 1, and gallium compound crystals prepared by the method. The method comprises such a step that when manufacturing a gallium compound in a sealed fused silica reaction tube, at least one of silicon, a silicon compound, boron, a boron compound, aluminum and an aluminum compound is added into the vessel supporting the melt of the compound, particularly the fused silica vessel, and at the same time oxygen or a metallic oxide which is unstable at the temperature of the furnace and which can form a gallous oxide (Ga_2O) atmosphere is added into the sealed fused silica reaction tube, whereby silicon in the melt is removed and a thin film of a stable oxide is formed around the melt to suppress silicon contamination for a long time. The vapor of gallous oxide reduces the concentration of free silicon in the melt, while the film of a stable oxide around the melt remarkably reduces the free space where gallous oxide can be freshly produced, silicon contamination being thus suppressed for a long time. Besides for the reduction of silicon contamination, this method can further be used for the doping with an impurity other than silicon.

3,623,906

ELECTRICALLY HEATABLE GLASS PRODCT AND A METHOD FOR THE PRODUCTION THEREOF

Kazuyuki Akeyoshi, Yamato-shi, Kanagawa-ken, and Naonori Hayashi, Tokyo, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1968, Ser. No. 769,044
Claims priority, application Japan, Nov. 9, 1967, 42/71,632
Int. Cl. B44d *1/20*; C09j *1/00*
U.S. Cl. 117—211 **13 Claims**



A glass product which can be electrically heated for removal therefrom, or/and prevention of deposition thereon, of ice, frost and fog, which is suited for use in the window of the vehicle and particularly in the rear window of the automobile. The product consists of a single tempered glass sheet, a plurality of narrow strips of resistance composed of electroconductive frit as fired onto at least one surface of said glass sheet in mutually parallel relation at intervals of about 3 centimeters, and at least a couple of bus bars electrically connected to said strips of resistance. The bus bars are respectively made of a solder which is composed predominantly of *Pb*, *Sn*, *Zn* and *Sb*, and are directly fired onto said glass surface so that they intersect and connect with the ends of said strips of resistance near the corresponding edges of the glass sheet.

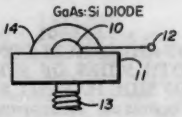
3,623,907

DOPED STRONTIUM HALIDE PHOSPHOR AND DEVICE FOR INFRARED TO VISIBLE LIGHT CONVERSION

Roderick K. Watts, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 19, 1969, Ser. No. 859,251
Int. Cl. B44d *1/02*
U.S. Cl. 117—224 **38 Claims**

Strontium chloride ($SrCl_2$) is doped with approximately 20% ytterbium (Yb) and approximately 1% of either erbium (Er) or holmium (Ho) and applied to the surface of a gallium arsenide:silicon doped diode. When



the diode is energized, the infrared energy which is emitted is converted to visible light by the doped strontium chloride phosphor.

3,623,908

ERASURE PROCESS FOR DRY TRANSFER PIGMENTED INKS

Stanley R. Hermann, Xenia, and Charles T. Fellows, Kettering, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

No Drawing. Filed Apr. 2, 1970, Ser. No. 25,294
Int. Cl. B32b *35/0*; C09j *5/00*
U.S. Cl. 134—4 **15 Claims**

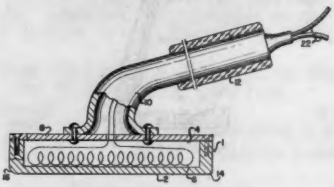
An erasure process for the substantial removal of a dry transfer pigmented ink from an encoded medium which comprises applying a composition comprising an elastomeric material and a volatile organic solvent to the encoded surface of a medium as a substantially continuous thin film. The volatile organic solvent is then evaporated from the composition thereby leaving a thin, substantially dry elastomeric film on the surface of the medium. The elastomeric film is then removed from the encoded surface thereby removing dry transfer pigmented ink from the medium contacted by the elastomeric film without any substantial damage to the erased medium.

3,623,909

METHOD OF REMOVING A COATING FROM A SURFACE

Josephine V. Jones, 2303 Piedmont Place, Wichita Falls, Tex. 76308

Filed May 26, 1970, Ser. No. 40,606
Int. Cl. B08b *7/00*
U.S. Cl. 134—5 **3 Claims**



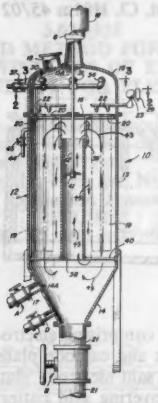
An apparatus and method of removing paint by heat, which utilizes a heating element to heat a sheet of material, which preferably includes a metal foil and a mesh-like material such as cotton or fabric mesh to enable the heating of the paint through the metallic foil and mesh to cause the softening and liquifying of the paint to such a degree that under heat and pressure it will be directed into the mesh or fabric, and upon cessation of heating the paint for a short time, the heated paint will adhere to the mesh to enable the removal of the mesh containing the paint from a painted surface. The sheet of metallic foil, which is preferably aluminum foil, prevents the electrical heating element from becoming coated with heated paint. Also the foil acts as an efficient heat conductor to heat the paint.

3,623,910

METHOD AND APPARATUS FOR LAUNDERING DUST COLLECTORS

Roland B. Calhoun, Glencoe, and Robert H. Ernest, Hinsdale, Ill., assignors to Flex-Kleen Corp., Chicago, Ill.

Filed Nov. 28, 1969, Ser. No. 880,640
Int. Cl. B08b 3/02, 3/04; B01d 46/04
U.S. Cl. 134—34 16 Claims



A method and apparatus is provided for laundering the interior walls and filter media of a conventional dust collector of the type that utilizes flexible bags for filtering air-borne solids. The apparatus includes a set of sprinkler heads located in the top clean air plenum for introducing fresh cleaning water in the fashion of a hard and uniform rain. The incoming water funnels into the bags and flows in backwashing relation therethrough to progressively fill the collector tank and produce a ring of water discharging outwardly through the bags and progressively sweeping the length of each bag. A draft tube is provided centrally in the intake air plenum and is equipped with an impeller to produce a circulation pattern travelling parallel to the bags.

3,623,911

HIGH-RATE CONSUMABLE METAL ELECTRODES

Harry G. Oswin, Chauncey, N.Y., assignor to Leesona Corporation, Warwick, R.I.

No Drawing. Filed Mar. 3, 1969, Ser. No. 803,954
Int. Cl. H01m 13/00
U.S. Cl. 136—83 9 Claims

Zinc electrodes containing a minor amount of a metal which is capable of creating cation vacancies in a zinc oxide lattice such as gallium or tin are described. The gallium or tin additive helps to prevent passivation of the zinc during rapid discharge of the electrodes in an electrochemical cell and reduces the amount of cell electrolyte needed for efficient performance. The gallium or tin is preferably introduced into the zinc by means of alloying, e.g., by electrolytic co-reduction of zinc and gallium and/or tin compounds.

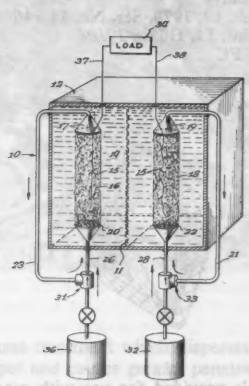
3,623,912

FUEL CELL WITH FLUID CIRCULATING MEANS

Bernard William Wessling, Winthrop, Mass., assignor to Brunswick Corporation

Filed Jan. 30, 1969, Ser. No. 795,286
Int. Cl. H01m 27/04
U.S. Cl. 136—86 D 2 Claims

This disclosure describes a new fuel cell and a three dimensional fuel cell electrode. The fuel cell comprises an electrolyte and a pair of three dimensional electrodes made of catalyzed micron-size metal filaments fabricated into skeletons. The hydrogen and oxygen gases are bubbled up through their respective electrodes in a direction closely prallel to the electrode's axes. By bubbling the gases through the electrodes in this manner a large



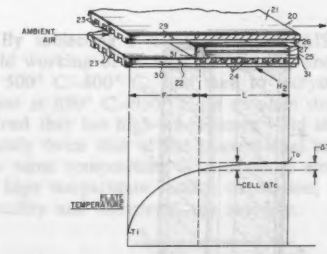
number of three phase reaction sites are obtained for a given volume of electrode material. These reaction sites lead to higher energy and power densities while requiring less catalyst material and lower initial cost. This fuel cell utilizes a three dimensional electrode whereas conventional fuel cells are limited to utilizing effectively only a two dimensional electrode surface.

3,623,913

FUEL CELL SYSTEM

Otto J. Adlhart, Newark, and Peter L. Terry, Madison, N.J., assignors to Engelhard Minerals & Chemicals Corporation

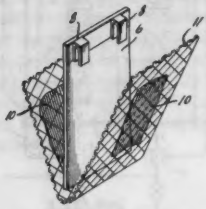
Filed Sept. 18, 1969, Ser. No. 859,111
Int. Cl. H01m 27/00
U.S. Cl. 136—86 R 16 Claims



In an air-breathing fuel cell stack, the air sweep simultaneously supplies oxidant and maintains the temperature and water balance in the cell. The individual cells of the stack contain an immobilized stable acid system as the electrolyte. A bipolar thermally conductive plate having a cooling fin on one side is disposed between and in contact with electrodes of adjacent cells. Gas flow channels on each of the electrode-contacting surfaces of the plates intercommunicate on the active area of the electrodes for distribution of the fuel and air over the electrodes. In a compact system, especially adapted for use

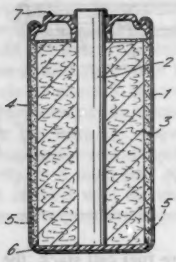
in remote areas, the fuel cell assembly is used in combination with a hydrogen generator.

3,623,914
METAL ANODE PACKAGE
William N. Carson, Jr., Schenectady, N.Y., assignor to the United States of America as represented by the Secretary of the Navy
Filed Feb. 19, 1970, Ser. No. 12,646
Int. Cl. H01m 29/04
U.S. Cl. 136—120 FC 4 Claims



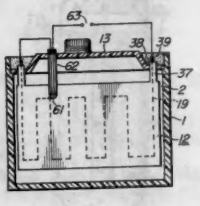
A salt package is provided for use with mechanically rechargeable primary metal-air cells. The salt package is formed from a binder-salt mixture spread as a dry solid on a portion of the nonconductive webbing which serves as a cell separator and which surrounds the replaceable metal anode. The binder, which rapidly disintegrates when wetted, is selected to be nonreactive with cell components and to provide a durable solid when dry. Means for simultaneous insertion of the salt package and replaceable anode are provided.

3,623,915
ELECTRIC DRY CELLS
Ching-Koon Pun and Ching-Chau Poon, both of P.O. Box 5538, Kowloon, Hong Kong
Filed July 16, 1969, Ser. No. 842,274
Claims priority, application Great Britain, July 11, 1969, 35,369/69
Int. Cl. H01m 1/02
U.S. Cl. 136—133 7 Claims



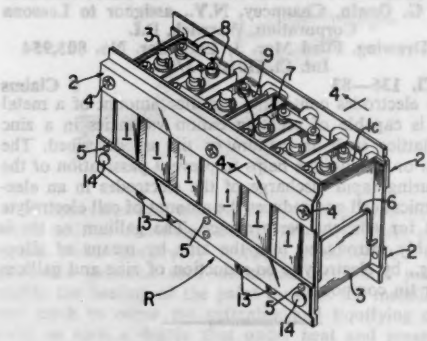
An electric dry cell having the open end of its cup electrode closed by a moulded plastics plug which is gripped around its periphery by the inturned end of the cup and has a central aperture embracing the rod electrode, annular spaces filled with sealing material being provided respectively between the periphery of the plug and the wall of the cup electrode, and between the rod electrode and the wall of the central aperture in the plug.

3,623,916
STORAGE BATTERY WITH HEATER
Tadao Toyooka and Takeo Nishida, Toyonaka-shi, and Hiroshi Ichihara, Fujisawa-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Japan
Filed Feb. 27, 1968, Ser. No. 708,676
Claims priority, application Japan, Mar. 2, 1967, 42/18,199, 42/18,214, 42/18,215, 42/18,216, 42/18,217, 42/18,218, 42/18,220, 42/18,221, 42/18,222, 42/18,223; Mar. 8, 1967, 42/20,258; Mar. 27, 1967, 42/19,752, 42/19,753
Int. Cl. H01m 45/02
U.S. Cl. 136—161 1 Claim



A storage battery comprising electrode plate groups including anode plates and cathode plates, a battery casing for accommodating said electrode plate groups and electrolyte, a closure covering said battery casing, and face heaters so treated as to be of electrolyte-resistance and provided in said battery casing, wherein said electrolyte is effectively heated to prevent the electromotive force from being decreased due to a decrease in temperature of said electrolyte, thereby producing a constant electromotive force.

3,623,917
RACK FOR STORAGE BATTERIES
Rene Chassoux, Talence, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romaninville, France
Filed Dec. 29, 1969, Ser. No. 888,375
Claims priority, application France, Dec. 31, 1968, 183,133
Int. Cl. H01m 1/04
U.S. Cl. 136—171 17 Claims



A mounting rack for quick and effective mounting and support of a group of parallelepiped-shaped accumulators, particularly of the type having metal casings with recessed upper and lower end faces which embodies end pieces linked by longitudinal members which latter have inwardly facing hooking or clamping elements engaged with the casing edges defined by the recessed upper and lower end

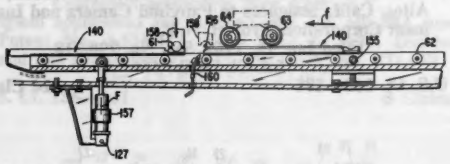
faces with the bottom parts of the hooking or clamping elements resting on the surfaces of the casing end faces. Thus, the group of accumulators are quickly assembled on the hooking or clamping elements of the lower longitudinal members and thereafter the upper longitudinal members are positioned to engage the upper casing edges and then secured to the end pieces as by bolting to provide a rigid secure support rack for the group of accumulators.

3,623,918

APPARATUS AND METHOD FOR MANUFACTURING SPIRAL WINDINGS OF ELECTRODE AND SEPARATOR STRIPS FOR ELECTROCHEMICAL GENERATORS

Jean Pierre Cailley, Ambares, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

Filed Dec. 18, 1969, Ser. No. 886,196
Claims priority, application France, Dec. 20, 1968, 179,750
Int. Cl. H01m *37/00*
U.S. Cl. 136—175 16 Claims



A spiral winding of superposed electrode and separator strips for electrochemical generators embodying wound electrodes and separators is effected by arranging a stack of electrode and separator strips in appropriate order on a guide rollable along a supporting bench to move the stack into proximity of a winding mandrel, whereat leading portions of the separator strips projecting forwardly of the stack on the guide are directed to and engaged by the mandrel which is then rotated causing spiral winding up of all the strips of the stack on said mandrel while simultaneously effecting translational displacement of the guide on the bench so that the guide accompanies the stack during the winding without occurrence of any translational movement of the stack in relation to the guide. Simultaneously, with this translational displacement of the guide a pivoting movement is imparted to the bench about an pivotal support whose axis is parallel to that of the mandrel so that at each instant during winding on the mandrel the electrode and separator strips of the stack on the guide arrive substantially tangentially to the spiral thereof being wound on the mandrel.

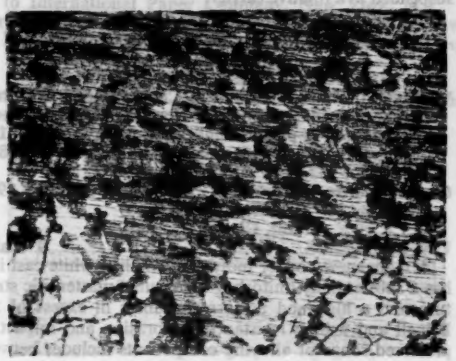
3,623,919

METHOD FOR TREATING THE SURFACE OF A FERROUS MATERIAL

Hisami Suzuki, Aichi-ken, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed May 6, 1969, Ser. No. 822,215
Claims priority, application Japan, May 16, 1968, 43/33,319
Int. Cl. C23f *7/00*
U.S. Cl. 148—6.14 R 2 Claims

A method for treating the surface of a ferrous material comprising polish-deoiling said surface, and immersing the material at room temperature in an iodine-bearing atmosphere which may be gaseous, or liquid to form a treated surface layer having excellent resistance to seizure and which inhibits peeling. The resistance to seizure of the treated surface may be further improved by low temperature heat treatment which disperses the iodine in the surface layer and causes greater penetration.

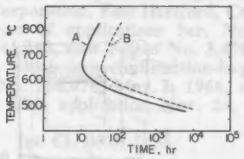


3,623,920

METHOD FOR PRODUCING A STAINLESS STEEL RESISTIVE TO HIGH TEMPERATURE AND NEUTRON IRRADIATION

Tatsuo Kondo and Toshihiko Kikuyama, Tokaimura, and Ryukichi Nagasaki, Mito-shi, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Mar. 17, 1969, Ser. No. 807,528
Int. Cl. C21d *1/80*
U.S. Cl. 148—12.3 1 Claim



By subjecting a stainless steel of AISI 300 series to cold working of at least 10 percent, and a strain aging at 500° C.–800° C., and then to recrystallization treatment at 650° C.–950° C., a stainless steel has been obtained that has high-temperature yield strength approximately twice that of the conventional austenite steel of the same composition, is resistant to embrittlement due to high temperature reactor irradiation, and yet retains ductility and microstructure stability.

3,623,921

COMPOSITION FOR PREVENTING BRAZE AND DIFFUSION FLOW

Cecil Behringer, Edina, Minn., and George J. Kamin, Towanda, Pa., assignors to Sylvania Electric Products Inc.

No Drawing. Filed Mar. 4, 1970, Ser. No. 16,583
Int. Cl. C23c *1/12*
U.S. Cl. 148—22 12 Claims

A solid material containing a rare earth compound suspended in a fugitive carrier is useful in preventing braze and diffusion flow by applying the slurried compound to the material to be brazed or diffusion coated

in a continuous layer by conventional methods. Alternative compositions are suspensions of rare earth compounds in a fugitive carrier and refractory metal oxides, admixed with rare earth compounds and mixtures thereof suspended in a fugitive carrier.

3,623,922
ALLOY WHITE CAST IRON

William M. Williams and Jean Claude Farge, Montreal, Quebec, Canada, assignors to Noranda Mines Limited
Continuation-in-part of application Ser. No. 575,461, Aug. 26, 1966. This application May 27, 1968, Ser. No. 732,143

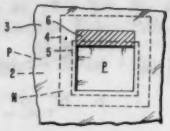
Claims priority, application Great Britain, Sept. 20, 1965, 40,027/65
Int. Cl. C22c *37/00*
U.S. Cl. 148—35 9 Claims

A manganese-copper molybdenum alloy white cast iron has a substantially uniformly distributed martensitic structure and a high and uniform hardness in excess of 500 Brinell and a high resistance to abrasion and impact. A preferred range of alloying components includes between 2.5 and 5% manganese, between about 2% and about 4% carbon, up to about 2% silicon and at least one of the group consisting of 0 to 2.5% copper and 0 to 1% molybdenum wherein the total amount of copper plus molybdenum is not less than 0.1%, the balance being essentially iron and incidental impurities commonly found in cast iron.

3,623,923
JUNCTION TRANSISTOR USING A THIN LAYER OF SEMICONDUCTOR MATERIAL OF A DIFFUSION-PROOF SUBSTRATE

David P. Kennedy, Wappingers Falls, and John A. Perri and Jacob Riseman, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 3, 1968, Ser. No. 756,806
Int. Cl. B01j *17/00*; H01l *3/00, 7/00*
U.S. Cl. 148—175 2 Claims



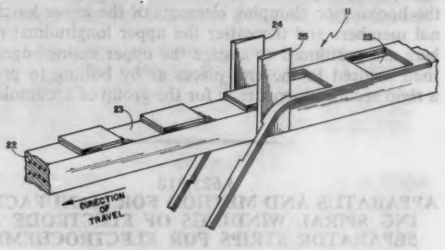
Planar transistor having reduced junction area for small capacitance. A thin layer of semiconductor material is placed on a substrate material which is a nearly impenetrable barrier against diffusion by normally used impurity atoms. The depth of the junction is limited to approximately the thickness of the thin layer of semiconductor material, thus limiting the junction area and capacitance.

3,623,924
ELECTRICALLY INSULATING TAPE AND METHOD OF APPLYING SAME

Theo A. de Winter, Methuen, Edward J. Lucas, Wayland, and William A. Lanyi, Boxford, Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed Dec. 15, 1969, Ser. No. 884,905
Int. Cl. H01b *7/03, 13/06*
U.S. Cl. 156—51 4 Claims

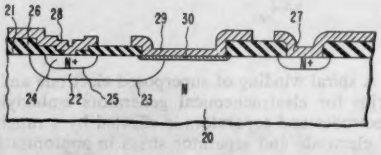
An electrically insulating tape comprising a thin ribbon of flexible electrically insulating material with adhesive on one flat surface and in contact with a low release backing material. Openings spaced one from another are provided along the length of the tape. Upon removal of the backing material, the tape is applied to an elongated surface having a dimension less than the width of the openings and trimmed to leave on the elongated surface only those portions of the tape intermediate the openings.



3,623,925
SCHOTTKY-BARRIER DIODE PROCESS AND DEVICES

Robert T. Jenkins, Pasadena, and Garth H. Wilson, Los Altos, Calif., assignors to Fairchild Camera and Instrument Corporation, Syosset, N.Y.

Filed Jan. 10, 1969, Ser. No. 790,318
Int. Cl. H01l *7/44*
U.S. Cl. 148—188 14 Claims



A Schottky-barrier diode capable of exhibiting superior reverse-bias operating characteristics and particularly suitable for large-scale integration can be fabricated by a method compatible with standard semiconductor processing techniques. Briefly, a highly conductive metallic layer overlying a region of semiconductor material is heated to a temperature sufficient to enable solid-state diffusion to occur between the semiconductor and metal, but below the eutectic point of both. A metal-semiconductor junction is thereby formed, wherein the junction lies below the original surface of the semiconductor region but has an edge at the surface, and unwanted impurities are prevented from interfering with operation.

ERRATUM

For Class 156—51 see:
Patent No. 3,623,924

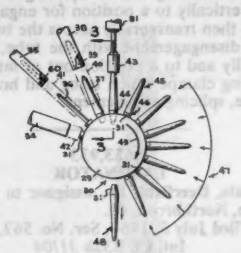
3,623,926
ULTRASONIC METHOD AND APPARATUS FOR ASSEMBLY OF THERMOPLASTIC MEMBERS

Thomas B. Sager, Plymouth Valley, Pa., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Filed Mar. 26, 1969, Ser. No. 810,692
Int. Cl. B29c *27/08*; B32b *31/16*
U.S. Cl. 156—73 14 Claims

A method and means for continuously sealing of members together such as members made of plastic wherein

there is provided an automatic feeder system and a nested rotating horn which produces or provides ultrasonic energy

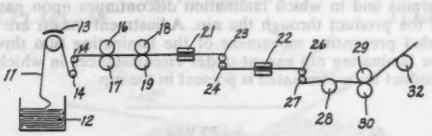


or kinetic energy in the form of shear waves so that the vibration direction of the horn is in shear.

3,623,927
METHOD OF MAKING CROSS-LAPPED SPREAD WEBS

George A. Watson, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Original application Jan. 3, 1967, Ser. No. 606,984, now Patent No. 3,515,621, dated June 2, 1970. Divided and this application July 25, 1969, Ser. No. 871,079
Int. Cl. B32b *5/02, 31/04*
U.S. Cl. 156—161 5 Claims

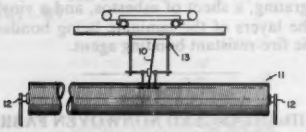


Making non-woven fabrics which look like woven cloth by striating a web of crimped parallel filaments, setting the striated web, and cross-lapping the striated web.

3,623,928
SELF-BONDED FILAMENT WOUND ARTICLE AND PROCESS FOR MAKING SAME

Robert C. Winckhofer and Gene C. Weedon, Richmond, Va., and Robin B. Mumford, Middletown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 11, 1969, Ser. No. 806,172
Int. Cl. B31c *1/00, 13/00*
U.S. Cl. 156—175 7 Claims

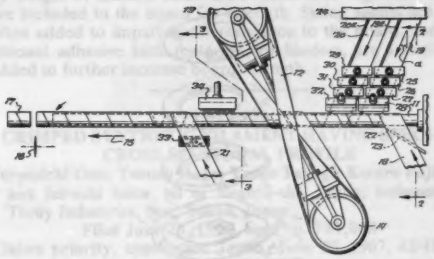


The article is manufactured by winding a filament composed of polymers wherein one polymer is dispersed as fibrils in a lower melting point polymeric matrix onto a mandrel followed by bonding of the filaments together through heating them to a temperature above the melting point of the matrix-forming polymer but below the melting point of the dispersed fibrils and permitting them to both self-bond and self-compact due to shrinkage thereof.

3,623,929
METHOD FOR PRODUCING SPIRAL WOUND CONTAINER

Thomas M. Wannamaker, Bastrop, La., and Charles I. Carter and Rupert O. Rogers, Mobile, Ala., assignors to International Paper Company, New York, N.Y.

Original application Oct. 7, 1966, Ser. No. 585,174, now Patent No. 3,428,239. Divided and this application Dec. 19, 1968, Ser. No. 813,347
Int. Cl. B65h *81/08*
U.S. Cl. 156—190 7 Claims

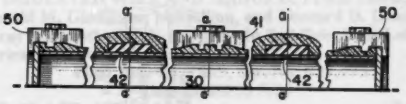


A method and apparatus for producing spiral wound containers in which a plurality of plies, coated on at least one surface with a thermoplastic coating with the inner ply coated on its inner surface with a slip or sanitary coating, are overlapped along adjoining edges and spirally wound onto a mandrel heated and adhesively secured with a thermoplastic coating to form a multi-ply spirally wound tube and the spirally wound tube is cut into can length units, the ends of the units are flared and can ends are attached.

3,623,930
COMPOSITE REINFORCED PLASTIC PIPE

James L. Grosh, Los Altos, Calif., assignor to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of applications Ser. No. 641,962, and Ser. No. 641,963, now Patent No. 3,470,917, both May 29, 1967, which is a continuation-in-part of application Ser. No. 546,676, May 2, 1966, now Patent No. 3,483,986. This application Nov. 24, 1967, Ser. No. 685,402
Int. Cl. B32b *1/08*
U.S. Cl. 156—250 6 Claims

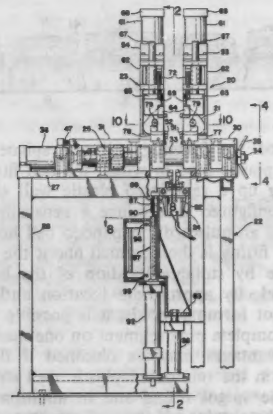


A method for forming bell and spigot fittings on a reinforced plastic pipe in which the bell fitting is formed by building up a reinforced plastic wall structure on a mandrel configured to produce a generally tubular pipe portion and an outwardly expanded bell housing portion. The spigot fitting is then formed about the wall structure of the pipe by suitable location of the bell portion of the mandrel. By appropriate location and configuration of the spigot forming molds, it is possible to form more than one complete pipe segment on one mandrel. Further, certain advantages may be obtained if the same resin used to form the reinforced plastic wall structure is used to form the spigot fitting and in addition other advantages may be obtained if the wall structure and the spigot structure are cured simultaneously.

3,623,931
METHOD OF MAKING PLASTIC CUSHION PRODUCT
Hollis L. Van Hosen, 586 Mountain View, Apt. 1, Palm Springs, Calif.
Filed Nov. 13, 1967, Ser. No. 682,012
Int. Cl. C09j 5/08
U.S. Cl. 156—306 12 Claims

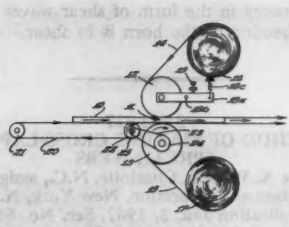
A plastic cushion product comprising a flexible polyvinyl chloride skin and a closed-cell polyurethane core which is preferably directly bonded to the polyvinyl chloride skin.
A preferred method of making the plastic cushion products comprising: molding and curing the vinyl chloride at temperatures above about 255° F. for a time sufficient to produce an open polyvinyl chloride shell of desired thickness and just sufficient to cure the polyvinyl chloride to its gild or gel stage; molding polyurethane foam at a temperature of at least 350° F. into a shape substantially conforming to the polyvinyl chloride shell; curing a second amount of vinyl chloride at the temperature and time conditions previously described to form a polyvinyl chloride cover such that the polyvinyl chloride shell and cover mate to form a completely enclosed structure; heating the completely enclosed polyvinyl chloride structure containing the polyurethane foam to a temperature of at least 350° F. to completely cure the polyvinyl chloride. The final cure bonds the polyvinyl chloride shell and cover into a substantially continuous skin and bonds the polyvinyl chloride shell and cover to the polyurethane foam to form an essentially unitary cushion product.

3,623,932
TUBE SPLICER
Edwin S. Woodhall, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 25, 1970, Ser. No. 14,100
Int. Cl. B29h 15/04; G03c 15/04
U.S. Cl. 156—503 46 Claims



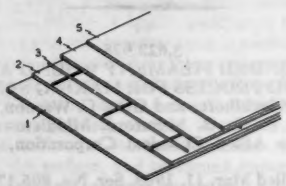
A machine for splicing rubber inner tubes. The machine has a pair of heated knives which move in parallel, generally rectangular, vertical pathways to cut exposed, aligned ends of a clamped tube immediately prior to moving and squeezing the freshly cut ends together in splicing engagement. Each knife moves vertically to a position for engaging an adjacent tube end, and then transversely across the tube. Immediately upon cutting disengagement with the tube, the knife again moves vertically and to a position out of interfering relation with the moving clamps which bring and hold the tube ends in compressive, splicing engagement.

3,623,933
LAMINATOR
Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.
Filed July 5, 1966, Ser. No. 562,866
Int. Cl. B32b 31/04
U.S. Cl. 156—552 4 Claims



An automatic laminator for the lamination of sheet-form product wherein lamination occurs automatically upon the introduction of the product to a nip and a laminating apparatus and in which lamination discontinues upon passage of the product through the nip. Adjustment means are provided preventing movement of the laminating film through the laminating nip except under circumstances in which the product to be laminated is present in the nip.

3,623,934
FIRE-RESISTANT LAMINATED SHEETING
Philippe Madou, 25 Avenue Roosevelt, Gent, Belgium
Filed July 13, 1970, Ser. No. 54,468
Int. Cl. B32b 21/10, 5/22
U.S. Cl. 161—5 F 2 Claims



A fire-resistant laminated sheeting consisting of an aluminum sheet, a fire-resistant Kraft paper sheet, a metallic reinforcing grating, a sheet of asbestos, and a vinyl synthetic resin film, the layers of the laminate being bonded together by a synthetic fire-resistant bonding agent.

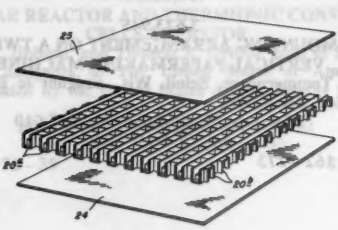
3,623,935
FLUID-ENTANGLED NONWOVEN FABRIC
William T. Allman, Jr., Charlotte, N.C.; James H. Winger, Charlotte, N.C., and William A. Burn, Jr., Rock Hill, S.C., assignors to Celanese Corporation, New York, N.Y.
Continuation of Ser. No. 516,858, Dec. 28, 1965, Pat. No. 3,357,074
Filed Dec. 4, 1967, Ser. No. 687,654
Int. Cl. B32b 5/12
U.S. Cl. 161—57 2 Claims

A nonwoven fabric comprising a plurality of layers of generally parallel fiber-containing strands, the strands of one of said layers being disposed at varying inclinations with

respect to the strands of an adjacent layer along the length of the fabric, and the fibers of said strands being entangled with

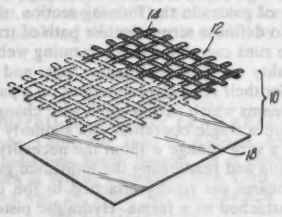
fibers of adjacent strands both in the same layer and in a different layer.

3,623,936
HONEYCOMB CORE CONSTRUCTION FOR PANELS
Peter Hotz, Wilkinsburg Borough, Pa., assignor to United States Steel Corporation
Filed July 20, 1967, Ser. No. 654,722
Int. Cl. B32b *3/12*
U.S. Cl. 161—68 2 Claims



A honeycomb core for fabricated metal panels. Core is formed of channels having openings which interfit with similar reversed channels. Facing sheets have face-to-face contact with webs of channels. Panel has continuous edge-to-edge passages both lengthwise and crosswise.

3,623,937
SCREEN LAMINATE
Glen P. Gasaway, Buford, Ga., assignor to Johnson & Johnson
Filed Mar. 26, 1968, Ser. No. 716,106
Int. Cl. B32b *17/04, 17/10*
U.S. Cl. 161—89 3 Claims



This invention resides in a film-screen structure defined by a screen construction of polyvinyl chloride coated fiber glass yarn heat-bonded to a polyvinyl chloride film.

3,623,938
MINERAL AGGREGATE INSULATION BOARD
Kenneth Lee Jenkins, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Filed May 7, 1970, Ser. No. 35,569
Int. Cl. B32b *3/26, 19/00*
U.S. Cl. 161—159 11 Claims

A strong, mineral aggregate insulation board of lowered thermal conductivity is provided by incorporating 40–80 percent by weight of ultrafine particles of expanded volcanic glass that is 60 mesh and finer particle size, and 5–30 percent by weight of mineral fiber. Short absorbent vegetable fibers are included in the board for strength. Sizing agents are also often added to impart water resistance to the board, and additional adhesive tack materials, or binders, are sometimes added to further increase board strength.

3,623,939
CRIMPED SYNTHETIC FILAMENT HAVING SPECIAL CROSS-SECTIONAL PROFILE
Terumichi Ono; Tsuneo Haga; Yasuo Takagi; Kotaro Fujioka, and Hiroshi Saito, all of Nagoya-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed June 28, 1968, Ser. No. 741,068
Claims priority, application Japan, June 30, 1967, 42/41747; 42/41748; 42/41754
Int. Cl. D02g *3/00*
U.S. Cl. 161—173 6 Claims

Crimped synthetic filament characterized by having special cross-sectional profile remarkably deformed from circular or polygonal ones of the conventional synthetic filaments. Peculiarity of the profile, being provided with at least tripartite branches extending from a central portion, is defined by the relations among number of crimps, measure of the cross-sectional profile, width and length of branches and areas of the cross section and of the smallest circumscribed circle.
A manufacturing method characterized by using a spinneret having orifices of special profiles and definition of the ejecting position of coagulating air.
Durable resilience to bending, enhanced covering effect of the filaments obtained with effective elimination of waxy touch or remarkable pill formation distinguished from conventional synthetic filaments are brought about by the invention.

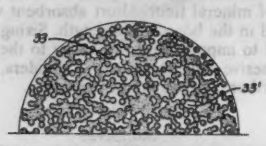
3,623,940
INSULATED WIRE AND MANUFACTURE THEREOF
Harold M. Gladstone, Millington, and Leonard D. Loan, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 16, 1969, Ser. No. 833,473
Int. Cl. H01b *7/00*
U.S. Cl. 161—175 2 Claims

Abrasion-resistant, fire-retardant conductive wire utilizes a single insulating layer of irradiation cross-linked PVC. Cross-linking is brought about by means of a difunctional monomer. Plasticizers necessary in ordinary cross-linked PVC may be eliminated in certain compositions.

3,623,941
POROUS OBJECTS FOR WRITING INSTRUMENTS
Elden Lucerne Goodenow, Los Angeles; James O'Sullivan, Culver City, and Daniel William Seregely, Los Angeles, all of Calif., assignors to The Gillette Company, Boston, Mass.
Original application June 27, 1966, Ser. No. 560,405, now Patent No. 3,558,392. Divided and this application Dec. 22, 1969, Ser. No. 886,899
Int. Cl. B43k *1/00*
U.S. Cl. 161—175 5 Claims

Directed to an elongated, coherent and self-supporting object of predetermined contour and cross section composed of

a large number of longitudinally extending strands of filamentary thermoplastic devoid of added resinous binder between strands, some of said strands being heat-set or lightly sintered together to provide a plurality of longitudinally extending and interconnected channels of virtually capillary size, the pore volume of the object being between 25 percent and 95 percent of the total bulk volume of the object, its bulk density being lower than the density of the filamentary thermoplastic before the strands thereof were heat-set to the predetermined contour and cross section. An elongated object as above stated, particularly adapted for use as a writing instrument tip and ink feeder, containing added resinous binder which discontinuously bonds the heat-set strands and imparts strength and nonbrushing life to the tip while pore volume of such tip is maintained at between 15 percent and 70 percent of the total volume of the tip and effective ink absorption and capillary flow of ink through the tip is maintained to permit fine-line writing for a prolonged time. Ink conveying channels of between 1 and 10 mils in average transverse dimension are preferred.



3,623,942

METHOD OF DAMPING VIBRATION AND ARTICLE

Kenneth B. Yerrick, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed July 9, 1970, Ser. No. 53,695

Int. Cl. B32b *25/20*; C08f *11/04*; E04b *1/98*

U.S. Cl. 161—206 **2 Claims**

The vibration of two interacting members are dampened by interposing between the two members by an elastomer which is prepared by milling 100 parts by weight of a polydiorganosiloxane gum containing phenyl radicals, 40 to 70 parts by weight of a reinforcing silica filler, $CH_3(C_6H_5)_2SiNHX$ where X is a hydrogen atom or $-Si(C_6H_5)_2CH_2$ and from 0.1 to 5 parts by weight of an organic peroxide and heating the milled mixture above 100° C. until a cured elastomer is obtained. The articles prepared by the method have the vibration dampened.

3,623,943

MULTILAYER COMPOSITE PLATE

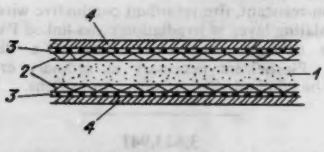
Dietrich Altenpohl, Feldmeilen, and Jean Schrade, Zurich, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed June 1, 1970, Ser. No. 41,923

Claims priority, application Switzerland, June 6, 1969, 8621/69

Int. Cl. B32b *15/08*

U.S. Cl. 161—218 **4 Claims**



A multilayer composite plate having at least one cover layer from a nonferrous metal has a core made from a polyolefin layer with a melting region over 120° C., an adhesive layer of ethylene interpolymer containing a carboxyl group connects the polyolefin layer with the metal cover layer, and an intermediate layer from polyethylene with a melting region below 120° C. placed between the polyolefin layer and the adhesive layer.

3,623,944

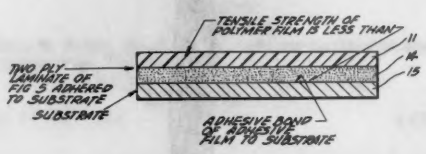
PRESSURE SENSITIVE ADHESIVE COATED POLYMERIC FILM LAMINATES

Irwin J. Davis, Plainfield, N.J., assignor to Compac Corporation (c/o Laird Industries Inc.), New York, N.Y.

Filed July 1, 1964, Ser. No. 379,504

Int. Cl. B41m *3/14*; B26b *27/08*

U.S. Cl. 161—242 **6 Claims**


TENSILE STRENGTH OF POLYMER FILM IS LESS THAN
TWO PLY LAMINATE OF FIG 5 ADHERED TO SUBSTRATE
SUBSTRATE
ADHESIVE BOND OF ADHESIVE FILM TO SUBSTRATE
11
14
15

A pressure sensitive adhesive comprising a two-ply laminate, wherein the upper lamina comprises a friable polymeric film and the lower lamina, which is bonded to and in intimate face-to-face contact with said upper lamina, comprises a film of a tacky, pressure sensitive adhesive; the said polymeric film having a tensile strength, at its breaking point, which is less than the strength of the adhesive bond formed between the said pressure sensitive adhesive film and any solid substrate to which said pressure sensitive adhesive film may be adhered, thereby resulting in the mechanical rupture of said upper lamina polymeric film when an attempt is made to remove the laminate from said solid substrate; the latter assembly being particularly suited for use as a tamperproof decal or label.

3,623,945

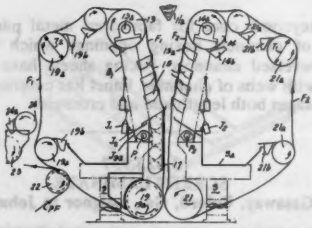
WIRE-MOUNTING ARRANGEMENT ON A TWIN-WIRE VERTICAL PAPERMAKING MACHINE

Paul E. Tommeraasen, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed July 25, 1969, Ser. No. 845,010

Int. Cl. D21f *1/00*

U.S. Cl. 162—273 **6 Claims**



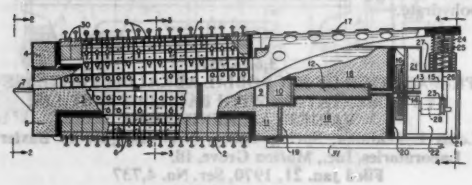
A paper-machine-forming section wherein a web is formed between two generally vertically travelling wires trained over a plurality of guides in the forming section, the guides being arranged to define a serpentinelike path of travel for the opposed wire runs carrying a newly forming web therebetween. The plurality of guides (breast rolls and foils) are all mounted for their respective functions on a pair of selectively movable beams which permit rapid wire change or the like as desired with a single operation and similarly a rapid startup after such a wire change without the necessity of individually repositioning and readjusting the individual guide means. the movable beams are rigidly attached to the breast rolls and pivotally attached to a frame. Hydraulic pistons attached to the beam and to the frame accomplish the pivotal movement of the beam. A stop member attached to the frame limits the extent of the beam's pivotal movement.

3,623,946

NUCLEAR REACTOR

Robert R. Hobson, and Thomas E. Griffin, both of San Jose, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed June 22, 1965, Ser. No. 467,821
Int. Cl. G21c *7/00*
U.S. Cl. 176—29 9 Claims



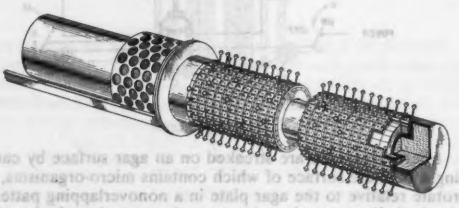
A nuclear reactor comprising:
an elongated cylindrical core longitudinally divided into quadrants, each core quadrant being neutronically subcritical;
means for flexibly fastening together two diametrically opposed quadrants at one end of said core and for retaining the remaining two quadrants in a fixed position;
means for driving the free ends of said flexibly fastened quadrants apart and for returning them together;
means for controlling the reactivity of said reactor core; and,
means for removing the energy generated by said reactor core.

3,623,947

NUCLEAR REACTOR AND THERMIONIC CONVERTER CELLS THEREFOR

Robert R. Hobson, and Thomas E. Griffin, both of San Jose, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed June 22, 1965, Ser. No. 467,822
Int. Cl. H02n *3/00*; G21c *1/00*
U.S. Cl. 176—39 12 Claims



A nuclear thermionic converter has a vertical stack of annular or ring-shaped nuclear fuel members. Within the ring-shaped members is reflector material. Thermionic diodes are mounted on the periphery of the fuel rings, with the emitters being in contact with the fuel. The collectors are filled with moderating material and the reactor is cooled by heat radiation.

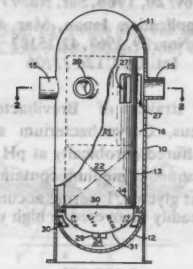
3,623,948

PRESSURIZED-WATER NUCLEAR REACTOR

Erroll W. Dotson, Louisville; John H. Kidwell, Alliance, and Gerald D. Lindstrom, North Benton, all of Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Apr. 25, 1968, Ser. No. 724,026
Int. Cl. G21c *15/24*
U.S. Cl. 176—50 8 Claims

A pressurized-water nuclear reactor wherein the incoming relatively cool water entering the reactor is distributed for temperature equalization and controlled flow through the



reactor core so as to minimize overheating of localized portions of the core.

3,623,949

PROCESS FOR THE PREPARATION OF 1-CHLORO-2-HYDROXYPROPYLPHOSPHONIC ACID

Janos Kollonitsch, Westfield, and Stephen Marburg, Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sept. 9, 1969, Ser. No. 856,472
Int. Cl. C12b *1/00*
U.S. Cl. 195—1 3 Claims

Racemic 1-chloro-2-hydroxypropylphosphonic acid, salts and ester derivatives thereof are prepared by reacting propenylphosphonic acid, hydrogen peroxide, and chloride ion in the presence of the enzyme chloroperoxidase. The chlorohydrin compound is useful in preparing antibacterial materials.

3,623,950

ENZYMATIC DEHAIRING PROCESS

Rolf Monsheimer, Darmstadt-Eberstadt; Ernst Pfleiderer, Darmstadt-Arheilgen, and Helmut Uhlig, Rossdorf/Darmstadt, all of Germany, assignors to Rohm Gesellschaft mit beschrenkter Haftung, Darmstadt, Germany

Filed Apr. 10, 1969, Ser. No. 815,236
Claims priority, application Germany, Apr. 13, 1968, P 17 69 160.0
Int. Cl. C12b *1/00*
U.S. Cl. 195—6 4 Claims

Process for dehairing skins and hides by treatment thereof, at a pH less than 5, with a mold-fungus protease showing its optimum effect at a pH below 5, with pepsin, with papain, or with a combination of these enzymes.

3,623,951

METHOD FOR PRODUCING L-GLUTAMIC ACID

Hideo Fukuda, Takasago; Toshihiko Kanzaki, Takarazuka; Hisayoshi Okazaki, Suita; Muneharu Doi, Suita, and Masaru Suzuki, Sakai, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Filed Feb. 8, 1966, Ser. No. 525,831
Claims priority, application Japan, Feb. 10, 1965, 40/7633
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 9 Claims

L-glutamic acid is obtained by cultivating *Brevibacterium thiogenitalis* in a culture medium containing an assimilable carbon source, a digestible nitrogen source and inorganic compound, and recovering L-glutamic acid from the culture broth.

3,623,952

METHOD OF PRODUCING L-SERINE BY FERMENTATION

Koji Kubota, and Teruo Shiro, both of Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Nov. 20, 1968, Ser. No. 777,459

Claims priority, application Japan, Mar. 8, 1968, 43/76617; Nov. 29, 1967, 42/15102

Int. Cl. C12d *13/06*

U.S. Cl. 195—29 8 Claims

When certain strains of Brevibacterium helvolum, Arthrobacter citreus, Corynebacterium sp., and *Candida pulcherrima* are cultured aerobically at pH 5–9 on an otherwise conventional aqueous medium containing 0.5 percent to 4 percent by weight glycine, L-serine accumulates in the culture broth and is readily recovered in high yields.

3,623,953

METHOD FOR ISOMERIZING GLUCOSE SYRUPS

William P. Cotter; Norman E. Lloyd, and Charles W. Hinman, all of Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.

Filed Oct. 7, 1968, Ser. No. 765,654

Int. Cl. C21b *1/00*

U.S. Cl. 195—31 9 Claims

The present invention is directed to a method for enzymatically isomerizing glucose in glucose-containing liquors. The presence of relatively small amounts of water-soluble salts of sulfurous acid during the enzymatic isomerization of glucose in glucose-containing liquors reduces color formation therein and increases the stability of the glucose-isomerizing enzyme.

3,623,954

PROCESS FOR MAKING 6-HYDROXY-3-KETO-Δ1,4-STEROIDS OF THE PREGNANE AND ANDROSTANE SERIES

Klaus Kieslich, Berlin, and Wolfgang Koch, Darmstadt-Arheilgen, both of Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Filed Jan. 28, 1970, Ser. No. 12,878

Claims priority, application Germany, Jan. 27, 1969, P 19 04 544.4

Int. Cl. C07c *167/00*

U.S. Cl. 195—51 R 18 Claims

6-hydroxy-3-keto-$\Delta^{1,4}$-steroids of the pregnane or androstane series are made by fermenting a 3β-hydroxy or 3β-acyloxy-5,6-epoxy steroid of the pregnane or androstane series which is saturated in the A-ring with bacteria of the genus Bacillus, Mycobacterium or Arthrobacter or enzymes thereof.

3,623,955

PURIFICATION AND RECOVERY OF ALKALINE PROTEASE USING CATIONIC-EXCHANGE RESIN

Leonard Keay, Florissant, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 14, 1968, Ser. No. 752,461

Int. Cl. C07g *7/028*

U.S. Cl. 195—66 R 6 Claims

Aqueous solution of alkaline protease, for example, a clarified beer from micro-organism production of enzymes or redissolved enzyme mixture, is treated with selected cationic-exchange resins to eliminate undesirable colored materials and any amylase present. Alkaline protease is absorbed, amylase and most pigmented impurities are not.

Use of low ionic strength solutions for absorption and neutral pH solutions, usually also of relatively low ionic strength, for elution, permits elimination of pigmented impurities and maximum protease recovery.

3,623,956

PREPARATION OF MICROBIAL ALKALINE PROTEASE BY FERMENTATION WITH BACILLUS SUBTILIS, VARIETY LICHENIFORMIS

George Kalabokias, Seclin, France, assignor to Societe Rapidase, S.A., Seclin, France

Filed Jan. 21, 1970, Ser. No. 4,739

Int. Cl. C12d *13/06*

U.S. Cl. 195—66 R 6 Claims

Alkaline protease is prepared by culturing a micro-organism of the species *Bacillus subtilis*, variety *licheniformis* in a nutrient medium with frequent incremental additions of carbohydrate.

3,623,957

PREPARATION OF MICROBIAL ALKALINE PROTEASE BY FERMENTATION WITH BACILLUS SUBTILIS, VARIETY LICHENIFORMIS

Louis I. Feldman, Spring Valley, N.Y., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Jan. 21, 1970, Ser. No. 4,737

Int. Cl. C12d *13/10*

U.S. Cl. 195—66 R 10 Claims

Alkaline protease is prepared by culturing a selected micro-organism of the species *Bacillus subtilis*, variety *licheniformis* in a nutrient medium optionally in the presence of cottonseed protein, and thereafter separating the alkaline protease thereby produced from said medium.

3,623,958

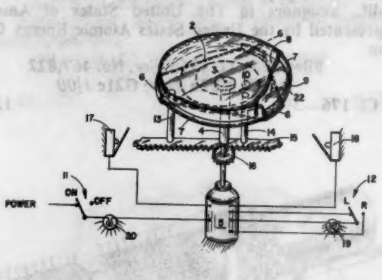
AUTOMATED STREAKING DEVICE FOR ISOLATING MICRO-ORGANISMS ON AN AGAR SURFACE

James E. Fitzgerald, Anaheim, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Mar. 20, 1969, Ser. No. 808,914

Int. Cl. C12b *1/02*

U.S. Cl. 195—103.5 R 5 Claims



Micro-organisms are streaked on an agar surface by causing a ball, the surface of which contains micro-organisms, to rotate relative to the agar plate in a nonoverlapping pattern. As the ball rotates, the micro-organisms are deposited on the agar surface so that by the end of the rotation cycle, micro-organisms are deposited in isolated amounts.

3,623,959

METHOD AND APPARATUS FOR CHARGING MATERIAL INTO A COKING FURNACE UNIT

Johannes Knappstein, Recklinghausen, Germany, assignor to Firma Carl Still, Recklinghausen, Germany

Filed Mar. 26, 1969, Ser. No. 810,588

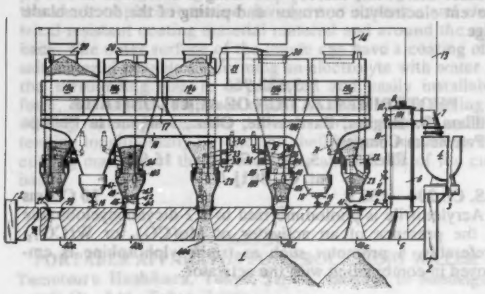
Claims priority, application Germany, Mar. 26, 1968, P 17 71 040.6

Int. Cl. C10b *31/04, 37/02*

U.S. Cl. 201—40 9 Claims

In a coking furnace unit having a multiplicity of furnace chambers, coal is supplied from a plurality of bunkers mounted on a movable support member. After the closure members are removed from the inlets to the furnace chambers, the bunkers are moved into sealing engagement with the inlets for supplying coal into the chambers. The charging of coal into the furnace chambers and the levelling of the

coal within the chambers is carried out to avoid the emission of smoke, soot and dust from the furnaces and to maintain at



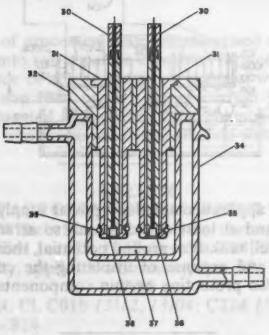
a minimum the period during which the furnaces are open to receive air from the atmosphere.

3,623,960

GLUCOSE DETERMINATION METHOD

David L. Williams, Reading, Mass., assignor to Monsanto Research Corporation, St. Louis, Mo.

Filed Apr. 7, 1970, Ser. No. 26,362
Int. Cl. G01n 27/46
U.S. Cl. 204—1 T 4 Claims



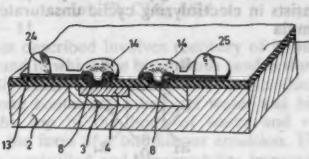
An electrochemical apparatus especially applicable for clinical use in determining glucose concentrations in solutions thereof comprising (1) a sample reservoir, (2) a glucose oxidase member consisting essentially of a well closed at the bottom by a dialysis membrane and containing an anode, glucose oxidase and a buffer solution, (3) a reference member consisting essentially of a well closed at the bottom by a dialysis membrane and containing an anode and buffer solution, (4) a cathode, (5) means for positioning the members and the cathode in the sample reservoir, (6) means for applying a voltage between the cathode and the anodes, and (7) means for measuring the electrical currents produced. The process for using the apparatus comprises adding a buffered glucose solution to the sample reservoir, immersing the cathode and the members into the solution, adding a quinone either to the members or to the glucose solution, applying a voltage between the cathode and the anodes and measuring the currents produced.

3,623,961

METHOD OF PROVIDING AN ELECTRIC CONNECTION TO A SURFACE OF AN ELECTRONIC DEVICE AND DEVICE OBTAINED BY SAID METHOD

Karel Jakobus Blok van Laer, Mollenhutseweg, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 12, 1968, Ser. No. 697,410
Int. Cl. C23b 5/48; B01j 17/00; H01l 3/00
U.S. Cl. 204—15 4 Claims



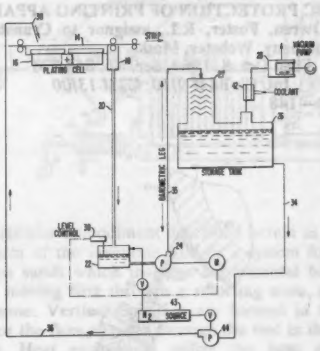
A method of making copper bump contacts on a monolithic integrated circuit is described. The semiconductor is first contacted by aluminum through a hole in a covering oxide. Next, finally divided nickel is vapor-deposited onto the aluminum. Preferably, before provision of the nickel layer, the aluminum is alloyed to the semiconductor and recoated with fresh aluminum. Finally, copper is electroplated onto the nickel to form the bump. A feature is the use of the nickel as an etch-resistant mask for selective removal of the underlying aluminum.

3,623,962

REDUCING ELECTROLYTIC SLUDGE FORMATION

Louis C. Beale, Grosse Ile, Mich., assignor to National Steel Corporation

Filed July 31, 1968, Ser. No. 749,017
Int. Cl. C23b 5/58, 5/68
U.S. Cl. 204—28 18 Claims



Method and apparatus for decreasing sludging in a stannous-tin electrolyte used in continuous-strip electroplating by continuous deaeration of the electrolyte which removes gases absorbed when the electrolyte is exposed to ambient atmosphere and by decreasing the opportunity for the electrolyte to absorb oxygen. A barometric leg, or other suitable pressure isolation means, is arranged to separate the path for continuous replenishment of electrolyte into an atmospheric pressure loop and a subatmospheric pressure loop. Desorption performance and efficiency is increased by operation at or below the vapor pressure of the electrolyte at the operating temperature for the system and by use of a vapor condenser on the vacuum side of the deaeration means used. Improved results are obtained by providing an inert gas shield during collection of electrolyte splash-over and carryout from the plating cells and also by injection of an inert gas into the electrolyte after deaeration and prior to exposure of the electrolyte to ambient atmosphere. The inert gas steps operate to reduce the opportunity for oxygen absorption.

3,623,963
PROCESS FOR THE MANUFACTURE OF PERFLUORALKYLSULPHONYL FLUORIDES

Peter Voss, Leverkusen-Wiesdorf, and Hans Niederprum, Monheim, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 6, 1970, Ser. No. 17,303
Claims priority, application Germany, Mar. 13, 1969, P 19 12 738.9
Int. Cl. B01k 3/00
U.S. Cl. 204—59 1 Claim

Process for manufacturing perfluoralkylsulphonyl fluorides which consists in electrolyzing cyclic unsaturated sulphones of the formula

in which R_1, R_2, R_3, R_4, R_5 and R_6 independently of one another denote hydrogen or a C_1–C_6-alkyl group, in hydrofluoric acid.

3,623,964
PROCESS FOR THE MANUFACTURE OF SULFUR HEXAFLUORIDE

Hiroshi Ukihashi, Tokyo; Yoshio Oda, Yokohama, and Manabu Suhara, Yokohama, all of Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

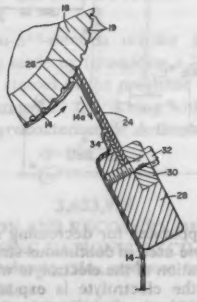
Filed June 29, 1970, Ser. No. 50,892
Claims priority, application Japan, July 3, 1969, 44/52141
Int. Cl. B01k 1/00
U.S. Cl. 204—61 8 Claims

Elemental sulfur is introduced into a cell containing an electrolyte of the composition $KF{\cdot}nHF$ (wherein n=0.9 to 3), and electrolysis is carried out with use of a carbon anode to produce sulfur hexafluoride.

3,623,965
CATHODIC PROTECTION OF PRINTING APPARATUS

Erling B. Owren, Foster, R.I., assignor to Cranston Print Works Company, Webster, Mass.

Filed Oct. 8, 1969, Ser. No. 864,731
Int. Cl. B41f 9/10; C23f 13/00
U.S. Cl. 204—148 6 Claims



A rotary printing machine for fabrics which includes a color box containing a printing paste constituting a liquid electrolyte, a rotatable print roll having an engraved cylindrical outer printing surface, a rotatable brush roll in the color box for supplying to the printing surface an excess of printing paste as the print roll rotates, a steel doctor blade with a horizontally extending longitudinal edge positioned against the printing surface to remove the excess printing paste for gravity flow across one side of the blade in a direction perpendicular to its edge and a printing cylinder traversing and pressing a fabric web against the print roll printing surface following supplying of the printing paste thereto by the brush roll and after removal of the excess by the doctor blade. The doctor blade has a more electropositive strip of metal, such as magnesium, or aluminum, in electrical contact with the steel doctor blade spaced from the edge thereof and extending generally throughout the length thereof on said one side for flow of the excess printing paste thereacross in electrical contact therewith, thereby providing a sacrificial anode to prevent electrolytic corrosion and pitting of the doctor blade edge.

3,623,966
PHOTODIMERIZATION OF ACRYLONITRILE

William B. Hughes, Bartlesville, Okla., assignor to Phillips Petroleum Company

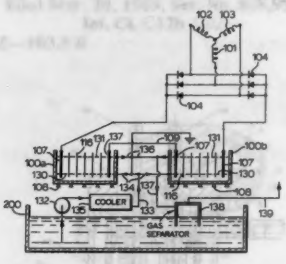
Filed Mar. 5, 1970, Ser. No. 16,973
Int. Cl. B01j 1/10
U.S. Cl. 204—158 R 10 Claims

Acrylonitrile is photodimerized to 1,2-dicyanocyclobutane in the presence of an activator of $Mo(CO)_6$ or $W(CO)_6$. Preferably, a promoter such as triphenylphosphine is employed in combination with the activator.

3,623,967
ELECTROLYTIC APPARATUS FOR THE PRODUCTION OF ALKALI METAL CHLORATE WITH GROUNDING MEANS

Richard M. O. Maunsell, Toronto, Ontario, Canada, assignor to Electric Reduction Company of Canada, Ltd., Islington, Ontario, Canada

Filed Nov. 10, 1969, Ser. No. 875,257
Claims priority, application Great Britain, Nov. 8, 1968, 52,999/68
Int. Cl. C23f 13/00
U.S. Cl. 204—196 5 Claims

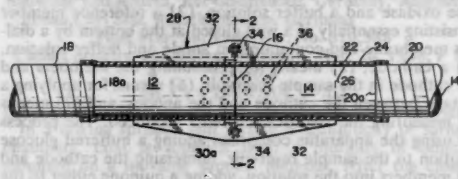


Electrolytic apparatus includes a power supply, at least two bipolar cells and at least one cell tank so arranged that the liquor in the cell tank is at ground potential, thereby avoiding the necessity and expense of insulating the cell tank from ground and also protecting certain components against corrosion.

3,623,968
SACRIFICIAL ANODE AND PIPE PROTECTED THEREBY

Alvin W. Bohne, Long Grove, Ill., assignor to The Tapecoat Company, Inc.

Filed Jan. 2, 1968, Ser. No. 695,182
Int. Cl. C23f 13/00
U.S. Cl. 204—197 21 Claims



A sacrificial anode and protective coating to be applied at the joints of welded sections of mill-coated pipe for the pur-

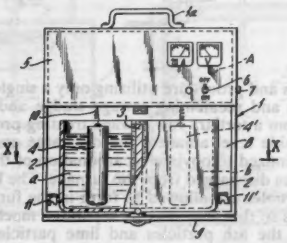
pose of coating the exposed mill-wrap coating cutback and cathodically protecting the pipeline against corrosion especially in underground installation. The preferred anode includes a tubular shell of sacrificial anodic material electrically contacted by integral or intermediate contacts with the pipe and having a longitudinal seam for opening and closing the anode to place it around the pipe and corrosion and electrical-resistant coating material material and around the cutback. The outer surface of the anode can have a coating of a salt material suitable for forming an electrolyte with water in the surrounding soil. In a preferred and easily installable form, the anode comprises a pair of shell halves having a coating material secured to the inner surface thereof and extending longitudinally beyond the shell halves to overlap the coating material of the pipe sections at the ends of the cutback.

3,623,969

PORTABLE APPARATUS FOR PROCESSING WATER

Tomotsuru Hushihara, Tokyo, Japan, assignor to Sandeigurafe Co., Ltd., Tokyo, Japan

Filed July 15, 1968, Ser. No. 744,886
Claims priority, application Japan, Oct. 2, 1967, 42/63216
Int. Cl. B01k *3/00, 3/10*
U.S. Cl. 204—271 2 Claims



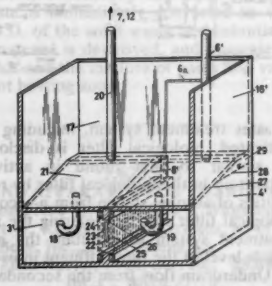
A method of processing water is comprised of the steps of filling water into two separate chambers formed by dividing a container made of a nonconductive material with a common porous wall and then passing direct current between electrodes each located within one of the chambers for separating the water into acidic water and alkaline water.

3,623,970

COMPACT OZONIZER FOR WATER LINES

Georg Haas, Wilhelm Strasse 24, Bad Durrheim, Germany

Filed Jan. 29, 1969, Ser. No. 794,853
Claims priority, application Germany, Jan. 30, 1968, P 12 78 956.9
Int. Cl. C01b *13/12, 13/04*; C22d *1/02*
U.S. Cl. 204—314 2 Claims



A unitary combination of an electrolyte cell and converter for liberated oxygen to ozone, with means for proportioning ozone dosage in accordance with rate of water flow in a conduit. Anode and cathode chambers are closed off at their upper portions and electrolyte levels therein vary with pressure of gases and may differ by resulting hydrostatic head.

3,623,971

USE OF CARBONATES AS pH CONTROLLER

Clement W. Bowman, Corunna, Ontario, Canada, assignor to Cities Service, Ltd., Calgary, Alberta, Canada; Imperial Oil Limited; Altantic Richfield Corporation and Royalite Oil Company, Limited, part interest to each

Filed Dec. 19, 1969, Ser. No. 886,763
Int. Cl. C10g *1/04*
U.S. Cl. 208—11 9 Claims

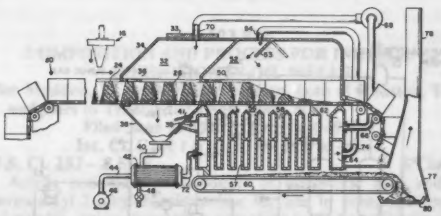
The process described involves recovery of bitumen from bituminous sand in which the bituminous sand is slurried with a fluid, usually water, the resulting slurry is introduced into a separation zone containing a body of water and bitumen is floated to the top of the body of water and recovered therefrom in the form of a bituminous emulsion. The pH of the system is controlled and processability improved by the addition of calcium carbonate in amounts between about 0.01 and about 1.0 weight percent. The use of calcium carbonate is especially beneficial in situations where bituminous sands are exposed to the atmosphere for a substantial period of time before being treated for recovery of bitumen therefrom. In such instances, calcium carbonate is preferably applied to the bituminous sand immediately following exposure to the atmosphere and serves to prevent undesirable reduction of pH of the sand prior to further treatment.

3,623,972

TAR SAND RETORTING

John D. Bennett, Richardson, Tex., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Oct. 11, 1968, Ser. No. 766,694
Int. Cl. C10g *1/02*; C10b *53/06*
U.S. Cl. 208—11 8 Claims



The particular embodiment described herein as illustrative of one form of the invention utilizes a system for retorting bituminous sands which includes a horizontal bed of such materials moving first through a retorting zone, and then a burning zone. Vertical openings are formed in the bed to provide for the flow of gases through the bed in the retorting operation. Heat exchangers utilize the heat of educted hydrocarbons and burning coke to supply heated gas to the retorting system.

3,623,973

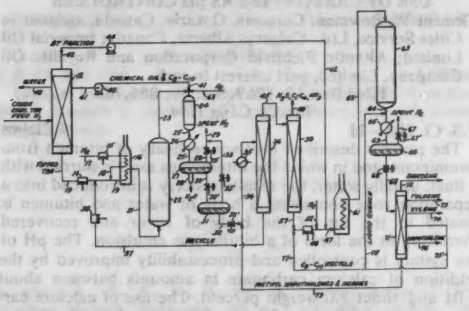
PROCESS FOR PRODUCING ONE- AND TWO-RING AROMATICS FROM POLYNUCLEAR AROMATIC FEEDSTOCKS

Mehmet Orhan Tarhan, Bethlehem, Pa., assignor to Bethlehem Steel Corporation

Filed Nov. 25, 1969, Ser. No. 879,641
Int. Cl. C10g *13/06, 37/02*; C07c *3/58*
U.S. Cl. 208—60 10 Claims

In a process for upgrading a topped-tar fraction of coal tar, topped-tar feedstock containing largely polynuclear aromatic hydrocarbons is hydrocracked in a hydrogen atmosphere in a first reaction zone at a temperature and pressure sufficient to hydrocrack the large molecules to three- and two-ring aromatic-naphthenes. The hydrocracked feed which also contains olefins, is catalytically hydrotreated in a second reac-

tion zone to saturate the olefins, and the feed is then catalytically treated in a third reaction zone at a temperature, pressure and hydrogen to hydrocarbon feed mol ratio sufficient to hydrocrack the three- and two-ring compounds to two- and one-ring aromatics, while, at the same time, naphthenes



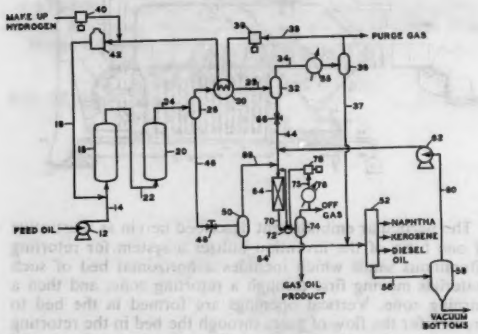
are dehydrogenated to aromatics, the alkyl aromatics are hydrodealkylated to nonsubstituted aromatic compounds, and substantially all oxygen, nitrogen and sulfur compounds unreacted in the first and second treatment zones are hydrorefined.

3,623,974

HYDROTREATING A HEAVY HYDROCARBON OIL IN AN EBULLATED CATALYST ZONE AND A FIXED CATALYST ZONE

William R. Mounce, Cranbury, and Roger P. Van Driesen, Hopewell, both of N.J., assignors to Cities Service Research and Development Company, New York, N.Y.

Filed Dec. 10, 1969, Ser. No. 883,814
Int. Cl. C10g *37/06*
U.S. Cl. 208—97 **4 Claims**



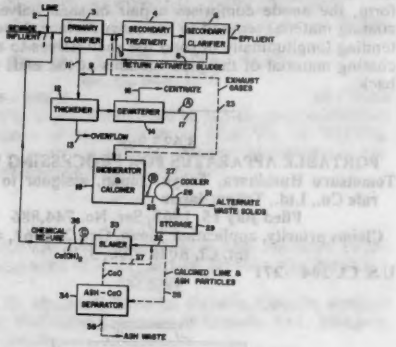
A process is shown for the hydrotreating of a heavy hydrocarbon feed in an ebullated-bed reaction zone and the fixed bed hydrotreating of a vacuum gas-oil fraction of the liquid product from the ebullated-bed reaction zone. The process comprises: treating the heavy hydrocarbon feed at high pressures above 1,700 p.s.i.g. and temperatures above 750° F. with hydrogen in the presence of the ebullated catalyst bed; withdrawing the treated liquid hydrocarbon from the reaction zone; reducing the pressure of said withdrawn liquid to 1,500 p.s.i. to flash off a hydrocarbon vapor stream containing hydrogen leaving a reduced pressure liquid hydrocarbon stream; fractionating the reduced pressure liquid stream to obtain a gas-oil fraction containing sulfur; and contacting the gas-oil fraction with the reduced pressure hydrocarbon vapor stream in the presence of a fixed bed of hydrotreating catalyst in a second reaction zone maintained at 1,500 p.s.i.g. to thereby hydrotreat the gas-oil fraction.

3,623,975

PLURAL PURPOSE SLUDGE INCINERATING AND TREATING APPARATUS AND METHOD

Paul J. Cardinal, Jr., and Robert J. Sherwood, both of Brisbane, Calif., assignors to Envirotech Systems, Inc., Brisbane, Calif.

Filed Mar. 14, 1969, Ser. No. 807,254
Int. Cl. C02c *5/02*
U.S. Cl. 210—6 **15 Claims**



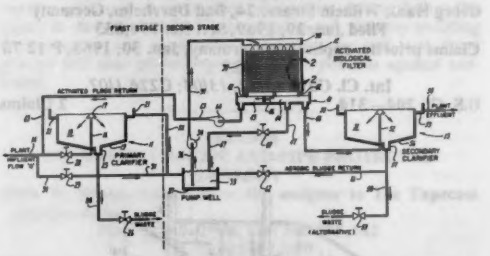
Apparatus and procedure utilizing only a single furnace for incinerating and recalcining sewage sludge and lime sludge obtained from a tertiary raw sewage treating procedure. The carbon dioxide level adjacent the discharge end of the furnace is minimized to obviate recarbonation of the recalcined lime particles discharged from the furnace. The lime particles and ash particles are allowed to form in the furnace in their natural sizes so that they may be separated mechanically. Alternatively, the ash particles and lime particles are slaked together for reuse in the sewage treatment procedure.

3,623,976

LIQUID WASTES TREATMENT METHOD

Joseph O. Cessna, Modesto, Calif., assignor to Del-Pak Media Corporation

Filed Oct. 30, 1969, Ser. No. 872,515
Int. Cl. C02c *1/04*
U.S. Cl. 210—7 **5 Claims**



A liquid wastes treatment system, including a two-stage, high-rate, activated, biological filter is disclosed. An activated floc, similar to that found in activated sludge processes, is built up in the biological filter by recycling substantial quantities of aerobic sludge from a secondary clarifier to the biological filter and by metering the solids wasted from the treatment system to maintain the mixed liquor, suspended solids level in the filter effluent in excess of about 1,500 mg./1. Underdrain flow from the secondary clarifier is a substantial percentage of plant influent flow and is recycled without extended mixing with plant influent or aeration prior to distribution over the biological filter. The filter media is preferably an array of lathes formed to provide many horizontal surfaces on which floc will form. When a two-

stage system is employed, including a primary clarifier, wasting is preferably accomplished by returning activated floc and biological slime sloughed from the biological filter to the primary clarifier and wasting solids from the primary clarifier, which also results in improved primary clarification.

3,623,977

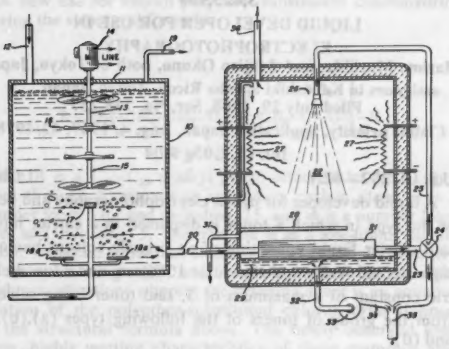
SEWAGE TREATMENT PROCESS

George W. Reid, Norman, Okla., assignor to FMC Corporation, San Jose, Calif.

Continuation-in-part of application Ser. No. 867,174, Oct. 17, 1969, now abandoned. This application June 25, 1970, Ser. No. 49,825

Int. Cl. B01d *1/02*; C02c *1/02*

U.S. Cl. 210—12 13 Claims



The method of treating waste materials such as aqueous sewage involves the steps of simultaneously comminuting and oxidizing waste suspended in an aqueous medium while said waste is being held under flow equalizing and Biochemical Oxygen Demand (B.O.D.) equalizing conditions, preheating aqueous waste withdrawn from said oxidizing zone for delivery to a radiant heating zone to a temperature level for pasteurization of said waste and above the vaporization temperature of water at the gas pressure maintained in said radiant heating zone, subjecting at least part of the preheated aqueous waste, introduced into said radiant heating zone under conditions to break up the liquid into droplet form, to direct radiant heat whereby the aqueous portion of said aqueous waste is immediately converted to vapor, the unsatisfied B.O.D. of the solid waste is substantially eliminated and viable material is destroyed, and separately discharging inert ash solids and the mixture of gases and vapor produced in said radiant heating zone.

3,623,978

METHOD AND APPARATUS FOR CLARIFYING LIQUIDS

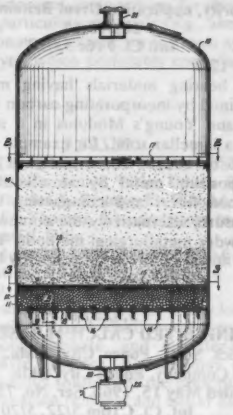
Ronald A. Boze, New Orleans; Otis J. Waguespack, Metairie, and Robert W. Kerrigan, New Orleans, all of La., assignors to Robert-Boze, Inc., New Orleans, La.

Filed Apr. 6, 1970, Ser. No. 25,695

Int. Cl. B01d *23/16*

U.S. Cl. 210—54 10 Claims

Method and apparatus for clarifying a liquid passed through a filter bed having relatively fine and relatively coarse layers, in which a polyelectrolyte is introduced into the liquid before it is introduced into the filter to flow from the coarse to the fine layer, migration of coarse to fine particles is prevented by one foraminous barrier and breakup of



the fine uppermost layer is prevented by another foraminous barrier.

3,623,979

COMPOSITION AND PROCESS FOR INHIBITING CORROSION IN OIL WELLS

Jim Maddox, Jr., and William Schoen, both of Houston, Tex., assignors to Texaco, Inc., New York, N.Y.

Filed June 29, 1967, Ser. No. 649,822

Int. Cl. C23f *11/10*, *11/14*; C07d *49/34*

U.S. Cl. 252—8.55 E 6 Claims

Amide condensation products of polymeric acid and 1-aminoalkyl-2-alkyl-2-imidazoline for use in compositions of oil-soluble, brine-dispersible corrosion inhibitors. Continuous or intermittent application of liquid coatings of these inhibitors on metals, particularly ferrous metals, in contact with sweet and sour petroliferous well fluids, form persistent films which afford excellent protection against corrosion, even at elevated temperature.

3,623,980

PRODUCT FOR PERMANENTLY ATTACHING LONG CHAIN MOIETIES TO TEXTILE MATERIALS

Arthur W. Lanner, Terrace Park, and Kenneth R. Ericson, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 31, 1967, Ser. No. 642,320

Int. Cl. D06m

U.S. Cl. 252—8.75 2 Claims

A composition comprising a water dispersible reaction product of a primary alkyl amine having an alkyl chain containing from about 12 to about 30 carbon atoms and from about 1.25 to about 2 moles of epichlorohydrin per mole of amine; an additive selected from the group consisting of borax, urea, anionic detergent and mixtures thereof; if desired, a highly alkaline material such as sodium hydroxide; and the balance water; process for utilizing said compositions to treat textile materials especially materials which have been treated with anionic optical brighteners.

3,623,981

COMPOSITE BEARING MATERIALS

Jeremy Peter Giltrow, Bordon; Patricia Ann Grattan, Farnborough; George Henry Kinner, Aldershot, and John Keith Lancaster, Reading, all of England, assignors to National Research Development Corporation, London, England

Filed May 6, 1968, Ser. No. 727,001
Claims priority, application Great Britain, May 4, 1967, 20,693/67
Int. Cl. F16c *33/12*
U.S. Cl. 252—12.2 7 Claims

Composite bearing materials having markedly reduced wear are obtained by incorporating carbon fibers of high tensile strength and Young's Modulus in a metal matrix. Advantageously a lamellar solid, for example molybdenum sulfide, may also be added. These materials may be manufactured by depositing metal by an electroless method on chopped carbon fibers and compacting the composite by heat and pressure, alternatively the composite may be compacted by powder metallurgical methods. The lamellar solid, if required, is added before compacting by heat and pressure.

3,623,982

RUST-INHIBITED CALCIUM BASE GREASES

William Patrick Scott, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed May 15, 1968, Ser. No. 729,425
Int. Cl. C10m *5/22, 5/20*
U.S. Cl. 252—33.3 8 Claims

This disclosure concerns calcium base greases containing a rust-inhibiting amount of a combination of lead naphthenate and didodecyl dimethyl quaternary ammonium nitrite (or nitrate). Preferably, the grease contains, also, a fatty imidazoline alkyl diamine dicaprylate. These greases are particularly suitable for use in salt-water environments.

3,623,983

PENETRATING OIL COMPOSITION

Warren C. Pattenden, and Robert E. Emond, both of Mooretown, Ontario, Canada, assignors to Esso Research and Engineering Company

Filed Dec. 18, 1968, Ser. No. 784,937
Int. Cl. C10m *1/40*
U.S. Cl. 252—33.4 9 Claims

Penetrating-oil compositions are prepared in which a mineral base oil having a viscosity between about 140 and 600 S.U.S. at 100° F. is compounded with ingredients tending to impart penetrating properties, rust inhibition and rust-dissolving properties thereto. The base oil may be blended, if desired, with a mineral distillate solvent oil, with between about 3 and about 25 percent of a rust preventive, which is a mixture of alkali metal petroleum sulfonates and carboxylic acids obtained by the oxidation of paraffin wax, and with between about 0.5 and about 25.0 percent of the mono or diesters or mixed mono and diesters of phosphoric acid and a long chain fatty alcohol in which the aliphatic chain of the alcohol contains a minimum of nine carbon atoms per molecule and wherein, before the reaction of the alcohol with the phosphoric acid, from 1 to 6 moles of an alkylene oxide of two or three carbon atoms per molecule is reacted with each mole of the alcohol. The final blended penetrating-oil composition has a viscosity of between about 50 and 200 S.U.S. at 100° F.

3,623,984

STABILIZATION OF ORGANIC MATERIALS WITH PARAPHENYLENE DIAMINE DERIVATIVES

Donald D. Carlos, Crown Point, Ind., and David W. Young, Homewood, Ill., assignors to Atlantic Richfield Company

Filed Aug. 16, 1968, Ser. No. 753,083
Int. Cl. C10m *1/38, 1/32*
U.S. Cl. 252—47.5 7 Claims

This disclosure is directed to a class of novel compounds having excellent antioxidant properties. The disclosure also relates to the use of new paraphenylene diamine derivatives for the stabilization of organic materials which tend to deteriorate due to oxidation reactions. Typical of such organic materials are liquids such as lubricating oils, alcohols, polyphenyl ethers, etc., semisolids, exemplified by greases; and solids such as high molecular weight polymers.

3,623,985

POLYSUCCINIMIDE ASHLESS DETERGENTS AS LUBRICATING OIL ADDITIVES

Yngve G. Hendrickson, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 29, 1967, Ser. No. 626,704
Int. Cl. C10m *1/32*
U.S. Cl. 252—51.5 A 4 Claims

Compositions having three alkenyl succinimides bonded through an amine nitrogen to a central nucleus such as a triazine or phosphorous acid derivative. The compositions find use as detergents and dispersants in lubricating oils.

3,623,986

LIQUID DEVELOPER FOR USE IN ELECTROPHOTOGRAPHY

Hazime Machida, and Zenjiro Okuno, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed July 29, 1968, Ser. No. 748,237
Claims priority, application Japan, Aug. 4, 1967, 42/49787
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 1 Claim

A liquid developer for use in electrophotography and being of the type in which a toner is dispersed in a carrier liquid, said carrier liquid consisting of an organic solvent having a high electric resistance of at least $10^{10}\Omega$cm. and a low dielectric constant of a maximum of 3, said toner being selected from the group of toners of the following types (a),(b),(c) and (d):

a. Toners of the type in which pigment particles are coated, by the kneading technique, with a homopolymer of a monomer selected from the group consisting of polymeric monomers having an epoxy radical (-0-) and polymeric monomers having a carbinol radical,

b. toners of the type that said homopolymer is graft-copolymerized to said pigment particles,

c. toners of the type in which the pigment particles are coated, by the kneading technique, with a copolymer in which is contained, by copolymerization, a monomer selected from the aforesaid group of polymeric monomers, and

d. toners of the type in which said copolymer is graft-copolymerized to the pigment particles.

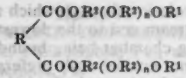
3,623,987

FUNCTIONAL FLUIDS

Robert Alan Cameron Ker; Robert Carswell; John Lavington Clarke, and Peter Anthony Burt, all of London, England, assignors to Costrol Limited, London, England

Filed Jan. 8, 1970, Ser. No. 3,553
Claims priority, application Great Britain, June 18, 1964, 25,326/64
Int. Cl. C09k *3/02*
U.S. Cl. 252—79 19 Claims

This invention is for improvements in or relating to hydraulic fluids and is particularly concerned with liquids employed as the power-transmitting medium in hydraulic brake systems for vehicles, for example, motor cars and airplanes. The hydraulic fluid of the invention contains at least 50 percent by weight of at least one ester of the formula



wherein R is an alkylene group of from two to eight carbon atoms, R^1 is an alkyl of from one to six carbon atoms or a phenyl radical, R^2 is ethylene, propylene or butylene and n is an integer of from zero to three.

3,623,988

USE OF POLYETHER-SUBSTITUTED CHLOROHYDRINS AS A LOW-FOAM, CAUSTIC STABLE CLEANING AGENT

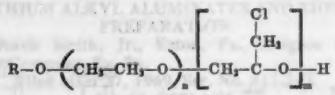
Dean R. Weimer, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of application Ser. No. 696,126, Jan. 8, 1968, now abandoned. This application June 8, 1970, Ser. No. 44,536

Int. Cl. C11d *1/66*

U.S. Cl. 252—89 **7 Claims**

A new use for known polyether-substituted chlorohydrins having the structural formula



where R is a C_4—C_{20} n-alkyl group attached to the oxygen atom through a primary or secondary carbon atom, n is a number from 5 to, and including, 25, and m is a number from 1 to, and including, 5. The new use is as a low-foam, caustic stable, nonionic surfactant cleaning agent especially effective for spray cleaning metal and for rinsing in mechanical dishwasher applications wherein the cleaning agent is an aqueous solution of the polyether-substituted chlorohydrins defined by the structural formula above. The newly observed low-foam, highly wetting characteristics of these materials also render them very useful as a rinsing aid in mechanical dishwashers, where even moderate foaming cannot be tolerated.

3,623,989

FADE-IN AND FADEOUT ARRANGEMENT FOR MOTION PICTURE CAMERAS

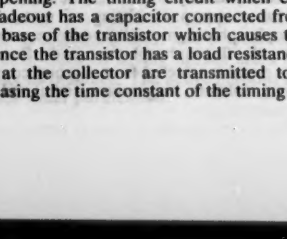
Helmut Mayr, and Richard Pelte, both of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 4, 1970, Ser. No. 16,308

Claims priority, application Germany, Mar. 7, 1969, P 19 11 772.7

Int. Cl. G03b *21/36*

U.S. Cl. 352—91 **11 Claims**



Fade-in and fadeout is accomplished by varying the current through a moving coil instrument which controls the diaphragm opening. The timing circuit which controls the fade-in and fadeout has a capacitor connected from the collector to the base of the transistor which causes the changes in current. Since the transistor has a load resistance, changes in potential at the collector are transmitted to the base, thereby increasing the time constant of the timing circuit.

3,623,990

LIQUID DETERGENT COMPOSITION

Cushman Merlin Cambre, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 26, 1967, Ser. No. 649,019

Int. Cl. C11d *3/06, 3/08, 1/84*

U.S. Cl. 252—137 **9 Claims**

Stable, liquid detergent compositions for cleaning hard surfaces containing particulate materials (e.g., abrasives), water, alkylbenzenesulfonate detergent, zwitterionic synthetic detergent and electrolyte, which preferably comprises a detergency builder.

3,623,991

DESCALING DETERGENT COMPOSITION

Philip M. Sabatelli, Cincinnati, Ohio; Edwin R. Loder, Cincinnati, Ohio; Charles A. Brungs, Ft. Wright, Ky., and Carmen R. Sarge, Ft. Thomas, Ky., assignors to Chemed Corporation, Cincinnati, Ohio

Filed June 10, 1969, Ser. No. 832,019

Int. Cl. C02b *5/02;* **C11d** *7/34*

U.S. Cl. 252—180 **4 Claims**

A descaling detergent composition is disclosed which includes in combination, a tetra-alkali metal pyrophosphate, an alkali metal tripolyphosphate, and a water-soluble alkali metal polyelectrolyte polymer. Articles may be effectively descaled by an aqueous solution of the present descaling detergent with greater scale removal and better hard water control than related compositions known to the art.

3,623,992

ROCK SALT COMPOSITION AND METHOD

Richard Kolasinski, Richmond, Mich., assignor to Diamond Crystal Salt Company, St. Clair, Mich.

Filed June 1, 1970, Ser. No. 42,470

Int. Cl. C01d *3/22;* **C02b** *1/48, 1/76*

U.S. Cl. 252—182 **8 Claims**

A rock salt product for rejuvenating fouled ion exchange resin beds, said rock salt having a particle size within the range from about No. 8 U.S. standard screen size to about five-eighths inches U.S. standard screen size, comprising, in weight percent, about 0.1 percent to about 0.5 percent sodium bisulfate, about 0.1 percent to about 0.5 percent monosodium phosphate, about 0.1 percent to about 0.5 percent water, and a balance of said rock salt.

3,623,993

ALUMINA DESICCANT FOR DRYING UNSATURATED ORGANIC GASEOUS COMPOUNDS

Michael J. Pearson, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Apr. 20, 1970, Ser. No. 29,895

Int. Cl. C01f *7/02;* **C09k** *3/00*

U.S. Cl. 252—194 **5 Claims**

An active alumina composite characterized by having the capability of drying and simultaneously inhibiting polymerization of organic gaseous polymerization-susceptible compounds is provided. The novel composite comprises a transition alumina substrate having a substantially chi-rho and eta structure and an alkali-modified surface, the composite containing about 3–25 percent by weight of a compound having the empirical formula $MAl(OH)_2CO_3$, where M is K or Na.

3,623,994

VERY SHORT LUMINESCENT DECAY-TIME PHOSPHOR

Martin Robert Royce, and Joseph Stanley Martin, Jr., both of Lancaster, Pa., assignors to RCA Corporation

Filed Oct. 31, 1969, Ser. No. 872,832

Int. Cl. C09r *1/68;* **H01j** *29/20*

U.S. Cl. 252—301.4 R **5 Claims**

A short-decay-time ultraviolet-emitting phosphor consisting essentially of yttrium aluminum oxide activated by cerium. The phosphor may be described by the molecular formula $YA10_3$:Ce. The disclosure includes a cathode-ray tube having a viewing screen structure comprised of the new phosphor.

3,623,995

ACTIVE MEDIUM FOR A LIQUID LASER AND METHOD OF PREPARATION THEREOF

Kenneth W. French, Mineola, N.Y., assignor to GTE Laboratories Incorporated

Filed Sept. 9, 1968, Ser. No. 758,225
Int. Cl. C09k *1/08, 1/16;* H01s *3/00*
U.S. Cl. 252—301.4 9 Claims

An active medium for a liquid laser containing selenium oxychloride solvated neodymium ions in a solution of phosphorous oxychloride and a Lewis acid. The liquid active medium is prepared by first dissolving a neodymium compound in a mixture of selenium oxychloride and a Lewis acid and then evaporating the solution to form a solid. The resulting solid material is then added to a mixture of phosphorous oxychloride and a Lewis acid.

3,623,996

STRONTIUM THIOGALLATE PHOSPHORS COACTIVATED BY CERIUM AND NEODYMIUM

Robert L. Amster, New York, N.Y., assignor to GTE Laboratories Incorporated

Filed July 1, 1969, Ser. No. 838,171
Int. Cl. C09k *1/12*
U.S. Cl. 252—301.4 S 12 Claims

A short-persistence phosphor consisting of strontium thiogallate coactivated by cerium and neodymium. This phosphor is cathodoluminescent and is suitable for use in short-persistence cathode-ray tubes. Strontium thiogallate singly activated by neodymium is also disclosed.

3,623,997

WALL-SEALING TREATMENT FOR MINUTE CAPSULES AND MINUTE CAPSULES HAVING WALLS OF SEALED POLYMERIC MATERIAL

Thomas C. Powell, West Alexandria, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed June 6, 1966, Ser. No. 555,279
Int. Cl. B01j *13/02;* B44d *1/02;* A61k *9/04*
U.S. Cl. 252—316 13 Claims

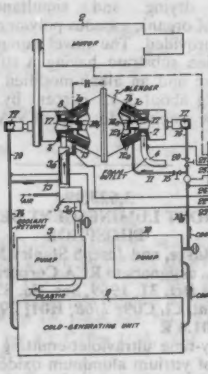
A method is provided for treating preformed, solvent-swollen, capsule walls, en masse, with an organic solvent solution of waxy material. The capsule walls, on being subsequently dried, retain an amount of the treatment material which serves to modify physical characteristics of the capsule wall by providing a degree of hydrophobicity thereto.

3,623,998

FOAM-MAKING INSTALLATIONS

Henri J. Bourne, Trept, France, assignor to Tunzini Amelioraci, Paris, France

Filed July 26, 1968, Ser. No. 747,891
Claims priority, application France, July 27, 1967, 115995
Int. Cl. B01d ; B01f ; B01j *13/00*
U.S. Cl. 252—359 E 10 Claims



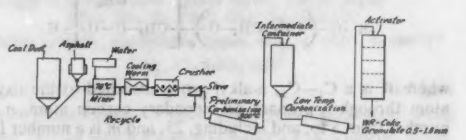
The present invention relates to an installation for making foams which comprises a blender comprising an annular mixing chamber of revolution through which said mixture circulates from the upstream end to the downstream end thereof, said annular mixing chamber being bounded by two respectively outer and inner coaxial walls preferably bearing protuberances thereon and possessed of relative rotating motion. The outer and inner walls are respectively subjected to the actions of two separate cooling circuits each equipped with individual means for adjusting its effectiveness, said two cooling circuits and the individual adjustment means thereof being so devised as to enable said outer and inner walls to be maintained substantially at the same temperature within the full speed range of said blender, said temperature being lower than a critical index temperature above which the physical properties of the mixture are affected.

3,623,999

PROCESS OF MAKING A BALL-SHAPED ADSORPTION COKE

Harald Juntgen; Joachim Karweil, and Dieter Zundorf, all of Essen, Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Filed Sept. 29, 1969, Ser. No. 864,274
Claims priority, application Germany, Oct. 1, 1968, P 18 00 238.5
Int. Cl. C01b *31/08*
U.S. Cl. 252—421 14 Claims



A carbonaceous material of a grain size below 100 μ is mixed with a reversibly softening binding agent at a temperature above the softening point of the binding agent and in the presence of water or water vapor. There results a doughy mass which is comminuted to the desired grain size. The comminuted material is then subjected to a preliminary low temperature carbonization followed by carbonizing or coking the material and then activating it.
The process permits obtaining of small size substantially ball-shaped adsorption coke in a highly economical manner.

3,624,000

NOVEL CATALYST FOR THE POLYMERIZATION OF CONJUGATED DIOLEFINS

Morford C. Throckmorton, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 11, 1969, Ser. No. 857,230
Int. Cl. C08d *1/14*
U.S. Cl. 252—429 B 1 Claim

There is disclosed a process for the polymerization of butadiene and butadiene in mixture with other conjugated diolefins to form polymers containing at least 90 percent of the butadiene units in the cis-1,4 configuration comprising contacting at least one diolefin under polymerization conditions with a catalyst system comprising (A) at least one compound selected from a group consisting of trialkylaluminum compounds and tetraalkyllithium aluminum compounds (B) at least one compound selected from a group consisting of nickel salts of carboxylic acids, nickel tetracarbonyl and organic complex compounds of nickel selected from a group consisting of bis(alpha-furyl) dioxime nickel, nickel acetylacetonate, bis(salicylaldehyde) ethylene diimine nickel and nickel salicylaldehyde and (C) at least one compound selected from a group consisting of metal fluoroborates, metal fluorophosphates, metal fluoroantimonates and organic derivatives of fluorophosphates and fluoroantimonates wherein the metal is selected from a group consisting of lithium, beryllium, calcium, magnesium, nickel and cobalt.

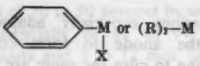
3,624,001

POLYMERIZATION CATALYSTS

Gert G. Eberhardt, Philadelphia, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Oct. 23, 1965, Ser. No. 504,071
Int. Cl. B01j *11/00*; C08f *7/04*, *19/00*
U.S. Cl. 252—431 19 Claims

Substantially soluble olefinic polymerization catalysts are obtained with an organo-calcium or -barium compound of the structure



where M is calcium or barium, X is chlorine, bromine or iodine and R is a hydrocarbon radical having 1–30 carbon atoms and a nonaromatic, tertiary chelating diamine.

3,624,002

RELATIVELY CONCENTRATED SOLUTIONS OF LITHIUM ALKYL ALUMINATES AND THEIR PREPARATION

William Novis Smith, Jr., Exton, Pa., assignor to Foote Mineral Company, Ex, Pa.

Filed Mar. 27, 1969, Ser. No. 811,247
Int. Cl. C07f *5/06*
U.S. Cl. 252—431 R 23 Claims

Solutions of lithium alkylaluminates soluble in concentrations higher than 6 percent by weight are prepared by combining certain specific alkyl lithium compounds with certain specific trialkylaluminum compounds, dialkylaluminum hydrides or dialkylaluminum chlorides in the presence of an alkane solvent or a mixture of an alkane with up to about 66 percent of an aromatic hydrocarbon solvent.

3,624,003

ZEOLITIC DESICCANT BODIES AND PROCESS FOR PREPARING SAME

Robert Mark Conde, Tonawanda, N.Y., and Wilfred Drost, Mobile, Ala., assignors to Union Carbide Corporation, New York, N.Y.

Filed July 24, 1969, Ser. No. 844,612
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z 8 Claims

Adsorbent bodies suitable for use in drying refrigerants comprise an agglomerate core of zeolitic molecular sieve crystals having thereon over substantially its entire outer surface a hardened permeable coating of a thermally deactivated boehmite alumina, said coating being hardened by having impregnated therein cured potassium silicate.

3,624,004

PROCESS FOR THE PRODUCTION OF ACTIVE CARBONS

Arnold N. Wennerberg, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Feb. 16, 1968, Ser. No. 706,145
Int. Cl. C01b *31/08*, *31/10*
U.S. Cl. 252—445 15 Claims

Process for the production of active carbons by the controlled oxidative activation with carbon dioxide of pyrolyzed salts of aromatic acids including monocarboxylic acids such as benzoic acid; polycarboxylic acids such as terephthalic, isophthalic, trimesic, or trimellitic acids; polynuclear carboxylic acids such as naphthoic acid; and polycarboxylic acids, such as coke acid. Carbons having surface areas in excess of 2000 $m.^2/g.$ may be obtained. The active carbons are particularly suitable for water purification.

3,624,005

GRAPHITE-GLASS COMPOSITIONS AND METHOD OF MAKING SAME

Yves Georges Godron, Paris, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

Filed Aug. 23, 1962, Ser. No. 218,844
Claims priority, application France, Aug. 29, 1961, 871811
Int. Cl. H01b *1/06*; H01c
U.S. Cl. 252—506 6 Claims

Compositions which can be shaped, machined, polished, cut, which have the same level of conductivity as graphite even for high contents of glass, which resist oxidation much better than graphite, and which have good water resistance, are made by impregnating graphite with glass which makes with graphite, when molten, an interior angle less than 45°. These compositions are superior to both glass and graphite for many uses. The invention reveals a group of glasses which have the property of wetting graphite. These compositions are useful as electric motor brushes, bearings and rods, bars, and plates.

3,624,006

STABLE OPACIFIED LIQUID DETERGENT COMPOSITIONS

Gerhart Karg, Pompton Lakes, N.J., assignor to Witco Chemical Corporation, New York, N.Y.

Filed July 7, 1969, Ser. No. 839,670
Int. Cl. C11d *1/34*, *3/066*
U.S. Cl. 252—529 1 Claim

Stable, opaque aqueous detergent compositions comprising alkali metal polyphosphate, alkylbenzene sulfonate, higher molecular weight fatty acid alkanolamide and a phosphate ester of an ethoxylated linear or branched chain aliphatic alcohol in the ranges of proportions as set forth hereafter.

3,624,007

ELECTRICAL CONTACT MATERIAL AND METHOD OF MAKING AND UTILIZING THE SAME

Edward Meyer, Russell, Pa., assignor to Sylvania Electric Products Inc.

Original application Dec. 14, 1967, Ser. No. 690,513, now Patent No. 3,523,357, dated Dec. 14, 1967. Divided and this application Jan. 7, 1970, Ser. No. 1,261
Int. Cl. H01b *1/02*; C09c *1/62*
U.S. Cl. 252—513 2 Claims

A composition of matter comprised of a powdered metal and a powdered glass formed by intimately mixing the two powdered materials together with a binder material, pressure forming into an article and sintering the article to its final form. The article is used ideally as an active electrical element and may be sealed to glass without any intermediate sealing material being utilized.

3,624,008

CATALYST AND METHOD FOR THE POLYMERIZATION OF ETHYLENE OXIDE

Adolfas Damusis, Detroit, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed June 30, 1969, Ser. No. 837,883
Int. Cl. C08g *23/14*, *23/06*
U.S. Cl. 260—2 A 9 Claims

A novel catalytic system comprising (a) a divalent alkaline earth metal, (b) anhydrous ammonia and (c) an organic dioxide is used to polymerize ethylene oxide to hard, granulated polymers having a final average molecular weight of from about 1 million to 10 million. The polymers are prepared by contacting the ethylene oxide with a suspension comprising the catalyst system and a nonsolvent for the polymer, thereby forming low-molecular weight polymers which are then built up by the addition thereto of further amounts of the oxide.

3,624,009

METHOD FOR RECLAIMING COMMERCIALLY USEFUL FIBERS AND RESIN FROM SCRAP MATERIAL

Wilbur B. Sussman, Dayton; Craig D. Belcher, Cincinnati, and George E. Brown, Jr., Cincinnati, all of Ohio, assignors to Fiber Process, Inc., Piqua, Ohio

Continuation-in-part of application Ser. No. 687,299, Dec. 1, 1967, now abandoned. This application Nov. 4, 1969, Ser. No. 873,800

Int. Cl. C08f *47/24*

U.S. Cl. 260—2.3 10 Claims

Scrap fabrics supported synthetic resin are first washed with solvent under controlled heat, pressure and agitation to produce as a first product clean, dried, resin and solvent free fibers. The polymer solution extracted from the washing stage is treated in one or more stages to produce as a second product granular, clean, dried resin compound. Clean solvent is recovered for recirculation through the system.

3,624,010

SILICONE FOAMS

Norman G. Holdstock, Scotia, N.Y., assignor to General Electric Company

Continuation of application Ser. No. 598,193, Dec. 1, 1966, now abandoned. This application Feb. 12, 1970, Ser. No. 10,063

Int. Cl. C08f *47/10*; C08j *1/22*

U.S. Cl. 260—2.5 7 Claims

An organopolysiloxane foam is made by mixing a carboxyalkylpolysiloxane, a diisocyanate and a tertiary amine; allowing the composition to foam; then curing the foamed composition. The foamed product makes an excellent thermal barrier, electrical insulator and shock absorbing mounting for electronic circuits.

3,624,011

CEMENT FOR NIPPLE JUNCTIONS OF CARBON ELECTRODES

Fritz Schipke, Meitingen uber Augsburg, Germany, assignor to Siemens-planiawerke Aktiengesellschaft fur Kohle-Fabrikate, Meitingen uber Augsburg, Germany

Continuation of application Ser. No. 561,497, June 29, 1966, now abandoned. This application Aug. 7, 1970, Ser. No. 62,135

Claims priority, application Germany, June 30, 1965, S97,909

Int. Cl. C08f *45/52*; C08q *51/14*

U.S. Cl. 260—9 R 5 Claims

Described is a carbonaceous cement for nipple junctions between carbon electrodes. The cement comprises, by weight, a mixture of 20 to 30 percent of a furfuraldehyde thermosetting condensation resin having a viscosity of 50 to 500 cp. 25 to 60 percent pitch having a melting point of 120 to 180° C. (according to Kramer-Sarnow), 10 to 40 percent carbon filler material, and 5 to 25 percent dextrin. The mixture is of a plastic consistency so as to be pressable into the shape of pins and is useful at relatively low operating temperatures.

3,624,012

PROCESS FOR PREPARING HALOGENATED COPOLYMERS OF OLEFINICALLY UNSATURATED CYCLOALIPHATIC MONOANHYDRIDES WITH CYCLIC MONOETHERS

Leslie C. Case, 14 Lockeland Road, Winchester, Mass.

Filed Nov. 21, 1969, Ser. No. 878,895

Int. Cl. C08f *3/70*, *27/02*

U.S. Cl. 260—17.4 20 Claims

An improved two-step process for the preparation of halogen-containing copolymers with hydroxylic and/or carboxylic acid end groups is described. This process involves the addition of halogen to polyester-ether copolymers derived from olefinically unsaturated cycloaliphatic dicarboxylic acid monoanhydrides.

3,624,013

HEAT-HARDENABLE WATER-DISPERSIBLE RESINS DERIVED FROM POLYHYDRIC POLYETHERS AND MIXTURES THEREOF WITH BENZOGUANAMINE-FORMALDEHYDE CONDENSATES PARTICULARLY ADAPTED FOR ELECTRODEPOSITION

Kazys Sekmakas, Chicago; Edward A. Gauger, Jr., Chicago, and Lester A. Henning, Arlington Heights, all of Ill., assignors to DeSoto, Inc.

Filed Feb. 10, 1967, Ser. No. 615,048

Int. Cl. C08g *17/007*, *17/16*, *37/34*

U.S. Cl. 260—18 20 Claims

Aqueous dispersions especially adapted to be electrodeposited at the anode to form corrosion resistant coatings after baking to cure the same are formulated based on water-dispersible condensation resins which are formed by esterifying a first part of the hydroxy functionality of a linear polyhydric polyether with a monocarboxylic acid such as a drying oil fatty acid. A second part of the hydroxy functionality is then consumed by reaction with a monoanhydride such as trimellitic anhydride providing a polycarboxylic intermediate which is reacted with a monoepoxide such as ethylene oxide, propylene oxide, butylene oxide or a glycidyl ester of a tertiary carboxylic acid to reduce the acid number to a value below 50 and to generate hydroxy functionality remote from the linear backbone of the polyether. The condensation resin is dispersed in water with the aid of a small amount of nitrogenous base, such as ammonia or an amine and the dispersed resin is heat-hardening per se. Cure is preferably effected using a water dispersible and nonwater-soluble heat-hardening benzoguanamine-formaldehyde resin which deposits in direct proportion to its concentration and which increases the resistivity of the film which is deposited to provide an opportunity for limiting film thickness at the voltage selected for electrodeposition.

3,624,014

REACTIONS PRODUCTS OF AN ORTHO-SILICATE AND A HYDROXY TERMINATED DIENE POLYMER AND THE PREPARATION THEREOF

Robert A. Moore, Park Forest, and Patrick W. Ryan, Chicago Heights, both of Ill., assignors to Atlantic Richfield Company

Filed Aug. 23, 1968, Ser. No. 754,982

Int. Cl. C08f *21/01*

U.S. Cl. 260—18 S 10 Claims

Stable polymeric gels are obtained as reaction products of tetraalkyl ortho-silicates, such as tetraethyl ortho-silicate, and an intermediate polyhydroxy polymer having an average of at least about 1.8 predominantly primary, terminal, allylic hydroxyl groups per molecule. These intermediate polyhydroxy polymers are addition polymers containing 0 to about 75 percent by weight of the residue of an alpha-monoolefin of two to about 12 carbon atoms, such as styrene or acrylonitrile, and about 25 to 100 percent by weight of the residue of a 1,3-diene of four to about 12 carbon atoms, such as butadiene. The intermediate polyhydroxy polymer has the majority of its unsaturation in the main carbon chain, has a viscosity at 30° C. of about 5–20,000 poises, and has a number average molecular weight of about 400 to 25,000. The equivalent ratio of tetraalkyl ortho-silicate to the intermediate polyhydroxy polymer can be varied broadly, such as from about 0.25 or lower to 3 or more, and preferably is about 1 to 2. Reaction resulting in gel formation occurs at ambient temperatures, such as 20° C., or higher, in contact with a catalytic amount of an alkanoic acid metal salt of tin, lead or cobalt, such as stannous octoate or dibutyl tin dilaurate. These polymeric gels vary from sticky gels to firm gels and, as they can be prepared at ambient temperatures, have utility in coatings and in casting of heat-sensitive articles. They can be mixed with asphalt or with rubber for use in rubber articles as rubber floor tile. These stable polymeric gels are also suitable, as prepared, for use as potting and encapsulating compounds.

3,624,015

FINISH/POLISH FOR WHITE LEATHER

James R. Vaughn, and Mary V. Durkin, both of Greensboro, N.C., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 9, 1969, Ser. No. 814,799
Int. Cl. C08c *11/70*; C08f *45/52*
U.S. Cl. 260—28.5 R 8 Claims

A finish/polish for white leather is disclosed which is an aqueous emulsion consisting essentially of (1) 5 to 15 percent by weight of a silicone-acrylate graft copolymer which consists essentially of 20 to 50 percent by weight of a silicone which consists essentially of 88 to 97 mol. percent of dimethylsiloxane units and 3 to 12 mol. percent of methylvinylsiloxane units, and 50 to 80 percent by weight of an acrylate which consists essentially of 58 to 62 percent by weight of ethyl acrylate, 32 to 40 percent by weight of methylmethacrylate and 2 to 6 percent by weight of a compound selected from the group consisting of methacrylic acid, acrylic acid and acrylonitrile, (2) 0.1 to 1.5 percent by weight of a leveling agent, (3) 2 to 4.5 percent by weight of ethylene glycol or a glycol ether, (4) 10 to 20 percent by weight of titanium dioxide, (5) 0 to 10 percent by weight of a wax, and (6) the balance water. The finish/polish can also contain as an optional ingredient from 1 to 3 percent by weight of a siloxane copolymer which consists essentially of 20 to 40 mol. percent of trimethylsiloxane units and 60 to 80 mol. percent of monomethylsiloxane units. The finish/polish of this invention does not tend to rub off and is, therefore, longer lasting, is essentially self-shining needing little or no buffing and provides a smooth finish with little or no evidence of powder or streaking.

3,624,016

POLYURETHANES AS TEXTILE ASSISTANTS

Baak W. Lew, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Sept. 2, 1969, Ser. No. 854,788
Int. Cl. C08g *22/04*
U.S. Cl. 260—29.2 TN 11 Claims

Essentially water-soluble methylolated low molecular weight polyurethanes formed from polyol carbonates and amines are described, and a method for treating fabrics with these methylolated polyurethanes or with methylolated polyol urethanes to enhance the abrasion resistance, crease recovery, softness and other properties of the fabrics is disclosed.

3,624,017

FAST CURING SILOXANE RELEASE EMULSIONS

Martin E. Sorkin, Greensboro, N.C., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 24, 1969, Ser. No. 879,547
Int. Cl. B32b *7/06*; C08g *47/04*; D21h *1/28, 1/34*
U.S. Cl. 260—29.2 M 8 Claims

Emulsion copolymers of from 80 to 98 mol. percent dimethylsiloxane and from 2 to 20 mol. percent $RSiO_{3/2}$ will cure on substrates under the influence of SiOH condensation catalysts in 30 seconds or less at 200° F. to give release values of less than 50 g. per inch. For example, an emulsion of a copolymer made by emulsion copolymerizing cyclic dimethylsiloxanes and methyltrimethoxysilane in amount to give 96 mol. percent dimethylsiloxanes and 4 mol. percent monomethylsiloxane will cure on paper in 20 seconds at 200° F. to give a release to J and J adhesive tape of 26 g. per inch.

3,624,018

CEMENTITIOUS COMPOSITIONS AND METHODS

Louis H. Eilers, Inola, and Christ F. Parks, Tulsa, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 486,530, Sept. 10, 1965, now Patent No. 3,511,313. This application Mar. 6, 1970, Ser. No. 17,290
Int. Cl. C08f *29/00*
U.S. Cl. 260—29.6 E 5 Claims

The sealing of void spaces, e.g. as in geological formations and/or between metal shapes is accomplished with a liquid slurry of a particulate, water-soluble organic polymer in an organosolvent The mixture of the polymer and solvent has a controlled set time to allow the emplacement of the slurry as a liquid. The slurry then sets to form a sealing cementitious material.

3,624,019

PROCESS FOR RAPIDLY DISSOLVING WATER-SOLUBLE POLYMERS

Donald R. Anderson, Oswego, and Alvin J. Frisque, La Grange, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Dec. 15, 1970, Ser. No. 92,031
Int. Cl. C08f *47/16, 47/18*
U.S. Cl. 260—29.6 H 6 Claims

Water-soluble vinyl addition polymers and gums may be rapidly dissolved in water by first dispersing these polymers into a water-in-oil emulsion and then inverting these emulsions in water. The inversion of the emulsion releases the polymer into water as a solution.

3,624,020

MODIFIED AQUEOUS DISPERSIONS

Wolfgang Klebert, Leverkusen; Karl Schafer, Krefeld, and Wolfram von Langenthal, Cologne-Bickendorf, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 27, 1967, Ser. No. 671,153
Int. Cl. C08f *1/00*
U.S. Cl. 260—29.6 6 Claims

A process for preparing modified aqueous dispersions of polymers and copolymers by reacting an aqueous dispersion of the polymers or copolymers with the reaction product of a high molecular weight compound containing at least two active hydrogen atoms and an excess of an organic polyisocyanate.

3,624,021

POWDERED GLASS FOR USE IN DRAFTING SURFACES AND IN A DIAZO TYPE MATERIALS

Andrew M. Barba, Conklin, N.Y., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 48,575, Aug. 10, 1960, now abandoned. This application July 6, 1965, Ser. No. 469,914
Int. Cl. C08c *11/28, 11/32*
U.S. Cl. 260—32.8 N 3 Claims

Sheet material, useful for drafting, and diazo-type materials, having dispersed therein glass powder in a particle size range of 1 to 20 microns.

3,624,022

ROOM TEMPERATURE CURING ORGANOPOLYSILOXANES

Marcus E. Ross, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of application Ser. No. 1,841, Jan. 9, 1970, now abandoned. This application Apr. 1, 1970, Ser. No. 24,825
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB 14 Claims

Compositions comprising 100 parts of a hydroxyl-terminated polymer of RR_fSiO- units, in which R is a lower alkyl radical and R_f is a beta-perfluoroalkylethyl radical, 0.5–20 parts of a silane of the formula $R'SiX_3$, in which R' is a phenyl or vinyl radical or mixtures thereof and X is a methoxy or ethoxy radical; and 0.1 to 10 parts of certain metal salts of carboxylic acids, such as stannous octoate, will cure at room temperature to give reversion resistant fluorosilicone elastomers.

3,624,023

TRANSPARENT SILICONE RUBBER VULCANIZABLE UNDER AMBIENT CONDITIONS

James V. Hartlage, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Apr. 9, 1970, Ser. No. 27,170
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB 3 Claims

A mixture of a fume silica treated with bis(trimethylsilyl)amine, a hydroxyl endblocked phenyl methyl polysilox-

ane, and alkoxy silicon compound and a curing catalyst cure at ambient conditions to a transparent silicone rubber useful as an encapsulant for electrical components.

3,624,024

FLAME RETARDANT POLY(TETRAMETHYLENE TEREPHTHALATE) MOLDING COMPOSITIONS

John R. Caldwell, and Marvin A. McCall, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,789
Int. Cl. C08g 51/04
U.S. Cl. 260—40 R 9 Claims

Compositions moldable into a self-extinguishing article comprising poly(tetramethylene terephthalate) and a brominated additive.

In a first aspect of the invention, talc is added to the composition, and the article molded from this composition has an unexpectedly high heat distortion temperature. In one embodiment of the first aspect of the invention an antimony containing compound is added to the poly(tetramethylene terephthalate), brominated additive and talc. In this first aspect of the invention the brominated additive comprises brominated diphenyl, brominated diphenyl ether, or brominated diphenyl carbonate.

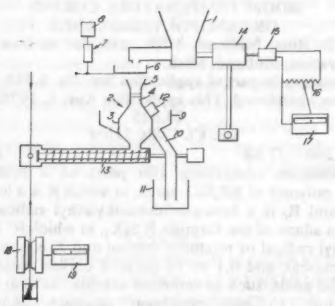
In a second aspect of the invention antimony trioxide is optionally added to poly(tetramethylene terephthalate) and a brominated additive to provide a composition from which an article can be molded that is increasingly flame retardant and talc is optionally added to the composition to provide an article that has an unexpectedly high heat distortion temperature. In this second aspect of the invention the brominated additive can comprise tetrabromophthalic anhydride, an ester of tetrabromobisphenol A, a tetrabromophthalic imide or a bistetrabromophthalic imide.

3,624,025

METHOD AND APPARATUS FOR OBTAINING CONSTANT CROSS SECTION EXTRUDATES WITHOUT MAKING MEASUREMENTS THEREON

Reginald James Twist, St. Helens, England, assignor to British Insulated Callender's Cables Limited, London, England

Filed Sept. 3, 1969, Ser. No. 854,906
Claims priority, application Great Britain, Sept. 9, 1968, 42,815/68
Int. Cl. B29f 3/06, 3/10
U.S. Cl. 264—40 5 Claims



The operation of an extrusion machine is controlled to obtain a constant cross section in the extrudate without the need to make measurements upon it. The machine is fed by a controlled feeding device which discharges into a reservoir that has a capacity sufficient to ensure that the machine is choke fed, and the reservoir is provided with means, such as a narrow neck, to amplify variations in the level so that unacceptable changes are immediately indicated. Signals representing a rate of feed to the reservoir and the line speed are obtained and the relationship between the feed rate and the speed of the machine and between the feed rate and the line speed are adjusted respectively to maintain a constant level in the reservoir and to establish a constant relationship so that the rate of extrusion of material is kept constant.

3,624,026

STABILIZATION OF RADIAL BLOCK COPOLYMERS

William O. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Apr. 24, 1969, Ser. No. 819,529
Int. Cl. C08f 1/84, 15/04
U.S. Cl. 260—41 18 Claims

Disclosed herein are stabilized compositions comprising a radial block copolymer admixed with the following additives: organic phosphite, metal alkyldithiocarbamate, benzotriazole, thiodipropionic acid ester, and carbon black.

3,624,027

MANUFACTURE OF POLYMERS AND RESULTING POLYMERS

Jean Pierre Wauquier, Le Vesinet; Jean Gaillard, Carrieres/Seine; Maseh Osgan, Paris, and Marc Mollard, Colobes, all of France, assignors to Institut due Francais du Petrole des Carburanto et Lubrifiants, Haute de Seine, France

Filed Oct. 23, 1968, Ser. No. 770,097
Claims priority, application France, Oct. 27, 1967, 126282; Oct. 31, 1967, 126,694
Int. Cl. C08g 43/00
U.S. Cl. 260—45.9 R 14 Claims

Stabilized polymers and copolymers of saturated cyclic ethers, such as epoxypropane, are obtained by contacting the ether with a catalyst obtained by reacting a trivalent metal compound with a divalent metal compound, such as an organo-aluminum-zinc compound, and stopping the reaction by adding an amine or amide to the reaction system. Aniline is a particularly preferred polymerization stopper. The catalytic residue must be left in the polymerizate.

3,624,028

PROCESSING OF FLAME-RESISTANT POLYMERS

William O. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 12, 1970, Ser. No. 36,699
Int. Cl. C08f 45/58
U.S. Cl. 260—45.75 R 8 Claims

The processability temperature limit for polymers containing flame retardants such as antimony oxide and bis(halogenated cyclohexyl) halogenated alkanes is raised by the addition of an aromatic ester.

3,624,029

HALOGEN-CONTAINING POLYMERIC RUBBER COMPOSITIONS HAVING IMPROVED SCORCH RESISTANCE

Masaaki Inagami, Yokohama-shi, and Keiji Komuro, Tokyo, both of Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

Filed June 5, 1969, Ser. No. 830,701
Claims priority, application Japan, June 12, 1968, 43/39904
Int. Cl. C08d 11/04; C08f 45/60
U.S. Cl. 260—45.9 R 4 Claims

A halogen-containing polymeric rubber composition having improved scorch resistance, said composition comprising 100 parts by weight of a halogen-containing polymeric rubber having incorporated therein, as a antiscorching agent 0.1–5.0 parts by weight of at least one compound of the formula

$$SH—R—(X)_n$$

wherein R is selected from the group consisting of the aliphatic, alicyclic and aromatic hydrocarbon radicals, X is selected from the group consisting of amino, imino and carboxyl radical, and *n* is a number from 1 to 2. and 0.5 to five parts per weight of an amino-containing cross-linking agent.

3,624,030
ORGANOSILSESQUIOXANES

Pierre A. Pruvost; Michel L. Bourbon, and Michel Vialle, all of Rhone, France, assignors to Societe Industrielle des Silicones, Paris, France

Original application Feb. 26, 1969, Ser. No. 804,366, now Patent No. 3,489,782, dated Dec. 13, 1970, which is a continuation of application Ser. No. 558,614, June 20, 1966, now abandoned. Divided and this application Nov. 13, 1969, Ser. No. 876,557
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 VA 22 Claims

Solventless, time-stable, polymerizable polycondensates of at least 75 mol. percent $RSiO_{1.5}$ units where R is methyl, vinyl or a hydrogen atom and up to 25 mol. percent of the units are SiO_2, $(CH_3)_2SiO$, $CH_3(H)SiO$ or $(CH_3)_3SiO_{0.5}$, are useful intermediates which react with other silicones and organic polymers to find use in making electrical insulation, laminating compounds and molding compounds.

3,624,031
PROCESS FOR PRODUCING A POLYETHYLENE-1,2-DIPHENOXYETHANE-4,4'-DICARBOXYLATE

Hidehiko Kobayashi, Tokyo; Hiroshi Komoto, Saitama-ken, and Masatsugu Yoshino, Saitama-ken, all of Japan, assignors to Asahikasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1968, Ser. No. 786,471
Claims priority, application Japan, Dec. 27, 1967, 42/83210; Apr. 12, 1968, 43/24189
Int. Cl. C08g *17/013, 17/015*
U.S. Cl. 260—47 C 4 Claims

A linear polyethylene-1,2-diphenoxylethane-4,4'-dicarboxylate having a favorable heat-stability, whiteness and a high crystallization velocity capable of being die molded in a short time like "Delrin" is produced by reacting a 1,2-bis-para-carboalkoxy-phenoxyethane having an acid value of 0.03 or less with ethylene glycol in the presence of an ester interchange catalyst, such as a strontium or barium salt of mono-carboxylic acid having one to four carbon atoms or an orthoborate compound of the formula:

$Sr[B(OCH_2CH_2OH)(OR_3''')]_2$ or

$Ba[B(OCH_2CH_2OH)(OR_3''')]_2$

wherein R''' is selected from the group consisting of cyclohexyl, phenyl, cresyl and diphenyl, until methanol or longer evolves, and subsequently continuing the reaction until the desired degree of polymerization is attained at an elevated temperature under a reduced pressure in the presence of, as a polycondensation catalyst, an organotin compound having the formula

$R_mSn\,X_{(4-m/P)}$

wherein R is an aliphatic radical having one to four carbon atoms, a 3- to 6-membered alicyclic radical or an aromatic radical, X represents —R, —OR, —OH, SnR_3,

$$-O-\overset{O}{\overset{\|}{C}}-R'' \quad \text{a halogen, } =O, \text{ or } \quad -O-\overset{O}{\overset{\|}{C}}-R'-\overset{O}{\overset{\|}{C}}-O-$$

(in which R' represents a di-valent aliphatic radical having one to four carbon atoms, or a di-valent aromatic radical and R'' is an aliphatic radical of one to four carbon atoms), *m* is an integer of one to four, P represents a numerical valence of the X radical and (4—m/P) is an integer of zero to three. A molded article obtained from said polymer has favorable mechanical properties, particularly a high Rockwell Hardness. Further, fibers obtained from said polymer possess a favorable tenacity, elongation, elastic recovery, boil shrinkage and maximum heat shrinkage stress.

3,624,032
EPOXY COMPOSITIONS CURED WITH CARBOXYLIC ACID ANHYDRIDES AND METALLIC SALT OF ACETYLACETONE

James J. Miyashiro, Woodstock, and Alfred W. Seiling, Crystal Lake, both of Ill., assignors to Morton International, Inc.

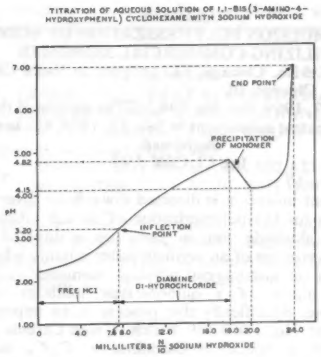
Filed Apr. 24, 1969, Ser. No. 819,519
Int. Cl. C08g *30/12*
U.S. Cl. 260—47 EC 14 Claims

A curable epoxy composition comprising an epoxy resin, a polycarboxylic acid anhydride curing agent, and, as a cure catalyst, a polyvalent metal complex of acetylacetone said composition, having improved storage stability, and thermoset properties, and a process for the preparation thereof.

3,624,033
LOW-TEMPERATURE PROCESS FOR THE PRODUCTION OF POLYAMIDES

Henry W. Steinmann, Sparta, and Edward T. Pollard, Middlesex, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed July 9, 1969, Ser. No. 840,248
Int. Cl. C08g *20/22, 33/04*
U.S. Cl. 260—47 CZ 6 Claims



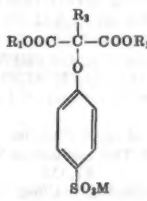
Polyamides are rapidly produced at relatively low temperatures (e.g., ambient temperatures) by polymerization reaction of diamines with diacyl halides. An aqueous solution of a diammonium salt (e.g., a diamine dihydrohalide) and a solution of an equivalent amount of a diacyl halide (e.g., a diacyl chloride) in a water-immiscible solvent (e.g., methylene chloride) are intimately mixed at medium to high shear rate followed by the rapid addition, with continued agitation, of an aqueous solution of an amount of an acid-acceptor e.g., an alkali metal monocarboxylate) sufficient to liberate the diamine and neutralize the byproduct hydrogen halide.

3,624,034
SULFOPHENOXY MALONATE COMPOUNDS AND CATIONIC DYEABLE COPOLYESTERS CONTAINING SAME

John A. Price, Swarthmore, and Mary J. Stewart, Riddlewood, both of Pa., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 867,375, Oct. 17, 1969. This application May 15, 1970, Ser. No. 37,838
Int. Cl. C08g *17/14*
U.S. Cl. 260—49 10 Claims

Sulfophenoxy malonate compounds and copolyester resins utilizing said malonate compounds comprising the condensation product of (a) an aromatic dicarboxylic acid or its lower alkyl diester, (b) an aliphatic glycol, and (c) a minor amount of a substituted acid or ester thereof represented by the formula:



wherein R_1 and R_2 are both hydrogen or lower alkyl radicals, R_3 is hydrogen or a lower alkyl radical, and M is a metal.

3,624,035

POLYETHER-MELAMINES AND PROCESS OF MANUFACTURE

Hans von Portatius, Marl, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed July 13, 1965, Ser. No. 471,702
Claims priority, application Germany, July 24, 1964, P 14 95 369.6
Int. Cl. C08g 9/30
U.S. Cl. 260—67.6 R 9 Claims

Polyether-melamine resins produced by the reaction of hemiformals and/or hemiacetals of polyvalent alcohols, possibly in mixtures with monovalent alcohols, with melamine, possibly in mixtures with urea, and in the presence of acid or basic catalyst.

3,624,036

INVERT EMULSION POLYMERIZATION OF ACROLEIN UTILIZING COMMERCIAL MONOMER

George T. Kekish, Chicago, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Jan. 27, 1969, Ser. No. 794,352The portion of the term of the patent subsequent to July 22, 1986, has been disclaimed.
Int. Cl. C08f 3/40
U.S. Cl. 260—67 7 Claims

The present invention is directed towards an invert emulsion process for the polymerization of an α,β ethylenically unsaturated aldehyde, and in particular is directed to the homopolymerization of an acrolein-water mixture which permits the use of commercial acrolein monomer containing 100–1,000 p.p.m. of a quinone-type inhibiter such as hydroquinone. Specifically this process is an improvement over U.S. Pat. No. 3,069,389 Welch (Union Carbide) by the selection of a specific determinative C_5–C_8 saturated aliphatic cut or individual alkane components thereof such as n-pentane, n-hexane, n-heptane, n-octane, and corresponding branched chain compounds such as iso-octane as the nonaqueous diluent or nonsolvent. This is coupled with a specific redox catalyst system embodying a dual oxidant consisting of persulfate/hydroperoxide and a reducing component consisting of polyacrolein bisulfite adduct. Increased commercial yields ranging up to 40 percent over prior art processes as well as clean directly usable polymer are obtained. Additionally, the utilization of commercially inhibited acrolein monomer assists in safety regimen involving tank car transporting acrolein since the hydroquinone inhibitor damps the potential explosive qualities of the monomer. Finally, the lack of necessity of removing hydroquinone from the input to the polymerization deletes a cost step from the former process.

3,624,037

PROCESS OF CURING AMINOPLASTS

Othmar Freitherr Von Ettingshausen, Essen, Germany, assignor to Th. Goldschmit, A. G., Essen, Germany

Filed Mar. 25, 1969, Ser. No. 810,385
Int. Cl. C08g 9/10, 9/30
U.S. Cl. 260—67.6 R 3 Claims

Aminoplasts are cured in the presence of N-methylethanolamine acetate or di[N-methylethanolamine]-oxalate.

3,624,038

PHENOL FORMALDEHYDE RESIN CONSISTING OF AN ARYL OR ALKYL SUBSTITUTED PHENOL-HCHO CONDENSATE AND AN ALKALINE EARTH METAL CARBOXYLATE SALT OF A HYDROXY RING SUBSTITUTED AROMATIC OR PHENYL SUBSTITUTED ALIPHATIC ACID

Charles Leslie Weidner, Cranbury, N.J., assignor to Johnson & Johnson

Continuation-in-part of application Ser. No. 672,464, Oct. 3, 1967, now abandoned. This application Nov. 5, 1970, Ser. No. 87,336
Int. Cl. C08c 11/34; C08g 5/08, 37/10
U.S. Cl. 260—53 R 9 Claims

This application discloses a new oil-soluble phenol-formaldehyde resin which comprises a reacted condensation catalyst consisting essentially of an alkaline earth metal salt of a hydroxy ring substituted monobasic aromatic or phenyl terminated aliphatic acid. The catalyst first acts to catalyze the condensation process and then is available to act as an accelerator in the event the resulting resin is to be used for curing compositions such as pressure-sensitive adhesives. Reactive and nonreactive resins of this invention, corresponding adhesives, and various catalysts such as zinc salicylate and others, are disclosed.

3,624,039

FLUORINATED KETONE INTERPOLYMERS WITH ALDEHYDES AND MIXTURES OF ALDEHYDES AND EPOXIDES

Henry O. Colomb, Jr., South Charleston, and Robert D. Lundberg, St. Albans, both of W. Va., assignors to Union Carbide Corporation

Filed Dec. 31, 1964, Ser. No. 422,494
Int. Cl. C08g 3/00, 15/00
U.S. Cl. 260—64 13 Claims

Interpolymers of fluorinated ketones and at least one member selected from the group consisting of aldehydes, epoxides and ketones other than such fluorinated ketones.

3,624,040

PROCESS FOR THE PRODUCTION OF POLYETHYLENE TEREPHTHALATE

Herman Rath, Neu-Isenburg; Hans-Jochen Rothe, Offenbach/Main, and Otto Friedrich De Riz, Doernigheim/Main, all of Germany, assignors to Vickers Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen

Continuation-in-part of application Ser. No. 636,276, May 5, 1971, now abandoned. This application Mar. 27, 1970, Ser. No. 23,477
Int. Cl. C08q 17/015; C07f 9/90
U.S. Cl. 260—75 R 11 Claims

Process for polycondensing di(alkylene glycol) terephthalate by use of metal compounds as catalysts in which the metal compound is an antimony complex of the formula

$$[SbX_n]\cdot\frac{n-3}{m}Z,$$

where X signifies a halogen or thiocyanate, n is a whole number from four to six, preferably, five, and Z is selected from the group consisting of di(pyridyl) ethylene and di(morpholino) ethane bases of basicity (+valence) m=2, and mixtures of said bases.

3,624,041

THERMOPLASTIC POLYESTER MOULDING COMPOSITIONS CONTAINING SODIUM FLUORIDE

Johannes Brandrup, Neu-Isenburg; Gunter Freund, Hofheim-Taunus; Ludwig Brinkmann, Frankfurt/Main, and Horst Pfister, Frankfurt/Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister, Lucius & Bruning, Frankfurt am Main, Germany

Filed June 24, 1970, Ser. No. 49,567
Claims priority, application Germany, July 1, 1969, P 19 33 235.5
Int. Cl. C08g 39/04
U.S. Cl. 260—75 H 4 Claims

Thermoplastic moulding compositions suitable for injection moulding on the basis of linear saturated polyesters of aromatic dicarboxylic acids with diols to which 0.005 to 5 percent by weight sodium fluoride has been added to improve the processing properties.

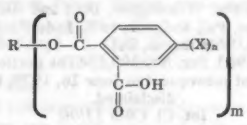
3,624,042

CARBOXY TERMINATED POLYMER AND CURED DERIVATIVE THEREOF

Hyman R. Lubowitz, Pasadena; Charles Kuchar, Glendora; Harold L. Greenberg, West Covina, and Raymond M. Price, Glendora, all of Calif., assignors to Aerojet-General Corporation, Azusa, Calif.

Original application Nov. 29, 1962, Ser. No. 241,058. Divided and this application Aug. 18, 1965, Ser. No. 505,080
Int. Cl. C08g *17/14*; C07c *69/80*
U.S. Cl. 260—75 N 10 Claims

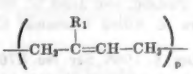
A cured rubber composition comprising the reaction product of a liquid carboxy-terminated polymeric adduct having the generic formula



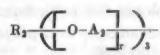
wherein X is a halogen, *n* is an integer of from 1 to 4, *m* is an integer of from 2 to 3; wherein when *m* has a value of 2, R is a polymeric divalent organic radical selected from those having the formula

where n *q* is an integer having a value from about 60 to about 600,

wherein A_1 is a lower alkylene radical and *r* is an integer having a value from 20 to about 200; and



wherein R_1 is selected from the group consisting of hydrogen and methyl and *p* is an integer having a value of from about 12 to about 120; and wherein when *m* is 3, R is a trivalent radical of the formula



wherein A_2 is a lower alkylene radical, *r* is an integer having a value of from about 8 to about 75, and R_2 is a trivalent alkylene radical, b filler, and an effective amount of a curing agent.

3,624,043

METHOD FOR THE PREPARATION AND USE OF A CATALYST FOR THE PRODUCTION OF POLYESTERS, MORE PARTICULARLY HIGH MOLECULAR WEIGHT LINEAR POLYESTERS AND CATALYST THUS OBTAINED

Francesco Siclari, Cesano Maderno; Giuseppe Messina, Limbiate, and Edgardo Horak, Barlassina, all of Italy, assignors to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Dec. 16, 1968, Ser. No. 784,248
Claims priority, application Italy, Dec. 23, 1967, 24346 A/67
Int. Cl. C08g *17/00*
U.S. Cl. 260—75 8 Claims

Method for the preparation of finely and evenly divided elemental antimony for use as catalyst in polyester manufacturing, wherein powdered antimony is subjected to mechanical size reduction operations, and then is dispersed in a liquid medium.

3,624,044

URETHANE POLYMERS

Chisung Wu, North Brunswick, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Original application Feb. 15, 1966, Ser. No. 527,492, now Patent No. 3,327,096. Divided and this application May 21, 1969, Ser. No. 826,675
Int. Cl. C08g *22/08*
U.S. Cl. 260—77.5 AR 5 Claims

Urethane polymers comprising the reaction product of (1) an organic polyisocyanate and (2) the product resulting from the reaction of (a) elemental phosphorus (b) an epoxide or an epithioalkane and (c) an alcohol or an alkanethiol said reaction being carried out in the presence of a catalytic quantity of a base. The aldehyde and/or alkylene oxide treated reaction product when combined with organic polyisocyanate also produce novel urethane polymers.

3,624,045

CROSSLINKED HEAT RECOVERABLE THERMOPLASTIC POLYURETHANES

Edward C. Stivers, Atherton, Calif., assignor to Raychem Corporation, Redwood City, Calif.

Filed Oct. 22, 1965, Ser. No. 502,623
Int. Cl. C08g *22/04*, *53/20*; B01j *1/10*
U.S. Cl. 260—77.5 5 Claims

This disclosure describes a class of thermoplastic polyurethane rubbers having heat-activated dimensional memory characteristics. Cross-linking of thermoplastic urethanes is carried out both by chemical means and by high-energy radiation.

3,624,046

POLYSULPHYDRYL HOMOPOLYMERS, AND METHODS OF PREPARING AND APPLYING SAME

Roger Charle, Soisy sur Montmorency; Gregorire Kalopissis, Paris; Andre Viout, Paris; Jean Gascon, Paris, and Constantin Aretos, Paris, all of France, assignors to L'Oreal, Parris, France

Continuation of application Ser. No. 565,371, July 15, 1966, now abandoned. This application Apr. 21, 1970, Ser. No. 28,272
Claims priority, application France, 27374
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 UA 5 Claims

A polymer having a polyanhydride homopolymer polymer chain and amide bonded mercapto side chains that will react with keratin fibers.

3,624,047

PRODUCTION OF α,α-DISUBSTITUTED β-PROPIOLACTONE POLYMERS WITH CONTROLLED MOLECULAR WEIGHT

Yasuhiro Ogawa, Suita, and Norio Awata, Settsu, both of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1969, Ser. No. 887,780
Claims priority, application Japan, Dec. 26, 1968, 43/96225
Int. Cl. C08g *17/017*
U.S. Cl. 260—78.3 5 Claims

The molecular weight distribution of poly(beta-lactones) is controlled by polymerizing the lactones in the presence of an anionic initiator and allyl halides or benzyl halides.

3,624,048

POLY(MALEIC ACID) SULFONATES AND THEIR PRODUCTION

John H. Blumbergs, Highland Park; John J. Rizzo, Trenton, N.J., and Donald G. MacKellar, Yardley, Pa., assignors to FMC Corporation, New York, N.Y.

Filed May 18, 1970, Ser. No. 38,556
Int. Cl. C08f *27/06*, *29/34*
U.S. Cl. 260—78.4 R 5 Claims

Poly(maleic anhydride)s are sulfonated to produce more soluble detergent builders without loss of detergency building properties.

3,624,049

THE PREPARATION OF POLY (ETHYLENE TEREPHTHALATE) USING TRIVALENT ANTIMONY COMPOUNDS AS CATALYSTS

John J. Ventura, Eatontown, and James Mackey, Colonia, both of N.J., assignors to M & T Chemicals, Inc., New York, N.Y.

Filed June 23, 1969, Ser. No. 835,793
Int. Cl. C08g 17/06
U.S. Cl. 260—78.4 E 16 Claims

A process for preparing polyethylene terephthalate wherein dimethyl terephthalate is reacted with ethylene glycol to form an ester of ethylene glycol and terephthalic acid or where terephthalic acid is reacted with ethylene glycol to form an ester of terephthalic acid and ethylene glycol where the resulting ester is polycondensed in the presence of a polycondensation catalyst, the improvement comprising carrying out the condensation or polymerization of the ester in the presence of a catalytic amount of a trivalent antimony compound exhibiting two direct carbon to antimony bonds and one direct bond from an antimony atom to oxygen; to oxygen linking an organic radical to said antimony atom; to oxygen linking another antimony atom to said antimony atom; or to a halogen atom.

3,624,050

PROCESS FOR PRODUCING POLYIMIDES VIA POLYAMIDE ACIDS WITHOUT USE OF SOLVENTS

Jorg Strickrodt, Heinrich Stoerl Strasse 39, 3011 Laatzen, and Ulirich Konig, Holbeinstrasse 12, 334 Wolfenbuttel, both of Germany

Filed Jan. 28, 1970, Ser. No. 6,594
Int. Cl. C08g 20/32
U.S. Cl. 260—78 TF 4 Claims

Process for producing polyimides by treating a dianhydride and a diprimary amine at a temperature in the range of 20° C. to 120° C. in the absence of a solvent and with continuous mixing to form a polyamide acid and converting the polyamide acid to the corresponding polyimide by heating the polyamide acid at a temperature in the range of 0 to 20° above the maximum temperature difference shown by the polyamide acid under differential thermal analysis.

3,624,051

PROCESS FOR POLYMERIZING AND COPOLYMERIZING VINYL CHLORIDE IN AQUEOUS EMULSIONS

Johann Bauer; Gerhard Beier, and Joseph Heckmaier, all of Burghausen-Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

Filed Aug. 23, 1968, Ser. No. 754,975
Claims priority, application Germany, Aug. 28, 1967, W 44668
Int. Cl. C08f 3/30, 1/13
U.S. Cl. 260—78.5 4 Claims

This invention relates to a process for making pastable polymerizates of vinyl chloride or of pastable copolymerizates containing at least 80 weight percent polyvinyl chloride, by polymerizing or copolymerizing vinyl chloride in aqueous emulsion, that is by polymerization or copolymerization of vinyl chloride which is dispersed in water by means of emulsifiers. The process is performed in the presence of water-soluble salts of aliphatic branched saturated monocarboxylic acids containing $-CH_2-$ groups in the alpha position to the carboxyl groups, with at least 8 carbon atoms per molecule, as emulsifiers.

The term "pastable" polymerizates or copolymerizates" means that the polymerizates or copolymerizates can be dispersed in the known manner in plasticizers, if desired by also using organic thinners which dissolve or swell the polymerizates or copolymerizates not at all or only a little, during the formation of pastes or plastisols or organosols.

3,624,052

HIGH MOLECULAR WEIGHT POLY(PROPYLENE SULFIDE)

Riad H. Gobran, Levittown, and Stephen W. Osborn, Yardley, both of Pa., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Jan. 8, 1962, Ser. No. 165,034
Int. Cl. C08g 23/00
U.S. Cl. 260—79 R 3 Claims

Elastomeric propylene sulfide polymers prepared with a diethyl zinc-water catalyst or a diethyl zinc-hydrogen sulfide catalyst system are described.

3,624,053

TRIFLUOROVINYL SULFONIC ACID POLYMERS

Hugh Harper Gibbs, Wilmington, Del., and Richard Normal Griffin, Wayne, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 24, 1963, Ser. No. 290,184The portion of the term of the patent subsequent to June 26, 1979, has been disclaimed.
Int. Cl. C08f 13/00
U.S. Cl. 260—79.3 R 3 Claims

1. A normally solid ion exchange resin polymer of trifluorovinyl sulfonic acid containing units of the structure

$$-CF_2-\underset{\underset{SO_2X}{|}}{CF}-$$

where X is a member of the class consisting of hydrogen, alkali metals, ammonium ions and amine ions.

3,624,054

CROSSLINKABLE LOW CHLORINE- AND-SULFUR-CONTENT POLYETHYLENE

Oliver A. Barton, Florham Park; James H. Carroll, Verona; Frank S. Elkins, Passaic, and John G. Miller, Denville, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 5, 1969, Ser. No. 870,391
Int. Cl. C08f 27/06, 27/02, 13/00
U.S. Cl. 260—79.3 R 2 Claims

Cross-linked low chlorine- and sulfur-content sulfochlorinated polyethylene has superior properties over both cross-linked polyethylene and cross-linked high chlorine- and sulfur-content sulfochlorinated polyethylene. In addition, it possesses processing advantages over polyethylene and highly chlorosulfonated polyethylene.

3,624,055

CURABLE COPOLYMERS OF EPISULFIDE MONOMERS

Riad H. Gobran, Levittown, and Stephen W. Osborn, Yardley, both of Pa., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Continuation-in-part of application Ser. No. 165,034, Jan. 8, 1962, and a continuation-in-part of 267,799, Mar. 25, 1963, now abandoned. This application May 18, 1964, Ser. No. 368,382
Int. Cl. C08f 25/00; C08g 23/00, 25/00
U.S. Cl. 260—79.7 13 Claims

Copolymers essentially composed of a major portion of monomeric units derived from one or more monomers which are free from ethylenic unsaturation, have at least three carbon atoms and have a polymerizable thiiranyl group; and a minor portion of monomeric units derived from one or more monomers having both a polymerizable thiiranyl group and a polymerizable ethylenically unsaturated group are disclosed. The monomers free from ethylenic unsaturation may be, for example, ethylene sulfide, propylene sulfide, the 1,2- and 2,3-butylene sulfides, vinyl cyclohexane sulfide, 2-benzyl thiirane, paramethyl styrene episulfide, styrene sulfide, cyclohexene episulfide, and isobutylene sulfide. The ethyleni-

cally unsaturated monomers may be, for example, allylthioglycidyl ether, thioglycidyl acrylates, thioglycidyl alkacrylates such as thioglycidyl methacrylate, vinyl cyclohexene episulfide, and butadiene monoepisulfide. The monomers are polymerized through the thiiranyl groups thereof. The copolymers can be cured through the ethylenically unsaturated groups thereof to produce elastomers having good physical properties and solvent resistance.

3,624,056

OLEFIN INTERPOLYMERS PREPARED WITH A CATALYST SYSTEM OF A TITANIUM COMPOUND, ALKYL ARYL HALIDE AND DIARYL MAGNESIUM

Robert J. Minchak, Parma Heights, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Sept. 28, 1965, Ser. No. 491,038
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.6 **11 Claims**

Conjugated and nonconjugated polyunsaturated hydrocarbon monomers are interpolymerized with α-olefins with a catalyst comprising a reducible compound of titanium, an alkyl aluminum halide and a diaryl magnesium compound.

3,624,057

POLYMERIZATION WITH MULTIFUNCTIONAL INIATORS PREPARED FROM VINYLSILANES OR VINYLPHOSPHINES AND ORGANOMONOLITHIUM COMPOUNDS

Ralph C. Farrar, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Jan. 30, 1969, Ser. No. 795,364
Int. Cl. C08d *1/32*; **C08f** *1/56, 15/04*
U.S. Cl. 260—83.7 R **7 Claims**

Multifunctional polymerization initiators are prepared by reacting an organomonolithium compound with a polyvinylsilane compound or polyvinylphosphine compound.

3,624,058

POLYMERS OF VULCANIZABLE ALKYL ESTERS OF ACRYLIC ACID AND ALLYL CHLOROACETATE

August H. Jorgensen, Jr., Avon Lake, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed May 6, 1968, Ser. No. 727,083
Int. Cl. C08f *15/20*
U.S. Cl. 260—86.1 **8 Claims**

Allyl chloroacetate is copolymerized with alkyl esters of acrylic acid to provide elastomers containing less than about 10 percent allyl chloroacetate which are essentially gel free, and in a vulcanized state have improved resistance to heat.

3,624,059

PROCESS AND CATALYST FOR THE POLYMERIZATION AND COPOLYMERIZATION OF OLEFINS

Felix Bloyaert, Boitsfort/Bruxelles; Andre Delbouille, Bruxelles, and Jacques Stevens, Braine L'Alleund, all of Belgium, assignors to Solvay & Cie

Filed Feb. 3, 1965, Ser. No. 430,207
Claims priority, application France, Feb. 7, 1964, 963,086The portion of the term of the patent subsequent to Sept. 3, 1985, has been disclaimed.
Int. Cl. C08f *1/56, 3/06*
U.S. Cl. 260—88.2 **4 Claims**

A method of polymerizing and copolymerizing olefins with a novel catalyst comprising (a) the reaction product of an inorganic compound of a polyvalent metal having a valence of at least three, e.g., $TiCl_4$, and a solid, bivalent metal hydroxylated inorganic phosphate, e.g., $Ca_5(PO_4)_3OH$, or hydroxychloride, e.g., Mg(OH)Cl, (b) a metal, a hydride, or an organometallic compound of metals of Groups IVB , VB and VIB, e.g., $Sn(C4H9)_4$, and (c) a Group IIIB or VB halide, e.g., $AlCl_3$.

3,624,060

BINARY CATALYST SYSTEMS FOR THE POLYMERIZATION OF UNSATURATED ALICYCLIC MONOMERS

William Allen Judy, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 31, 1969, Ser. No. 795,693
Int. Cl. C08f *19/04*
U.S. Cl. 260—88.2 **12 Claims**

There is disclosed a process for the ring opening polymerization of certain unsaturated alicyclic compounds such as cyclobutene, cyclopentene, cyclooctene, cyclooctadiene and the like which comprises subjecting such compounds to a two component catalyst system, the first component being an alkali metal compound of tungsten hexahalide or an alkyl amine derivative of tungsten hexahalide; the second component being an aluminum alkyl, an aluminum halide, an aluminum alkyl hydride or a tin alkyl halide.

3,624,061

PROCESS

Donald E. Hostetler, Monroeville, Pa., assignor to Dart Industries Inc.

Continuation of application Ser. No. 232,588, Oct. 23, 1962, now abandoned. This application Oct. 18, 1966, Ser. No. 587,399
Int. Cl. C08f *15/04*
U.S. Cl. 260—88.2 R **2 Claims**

Ethylene/propylene random copolymers are formed by reacting a minor amount of ethylene and a major amount of propylene in the reactor in the presence of hydrogen and a diethyl aluminum chloride and a cocrystallized $TiCl_3$·$AlCl_3$ catalyst under a pressure of from about 200 to about 500 p.s.i.g. which is sufficient to maintain at least part of the propylene in the liquid phase in the reactor.

3,624,062

PHENOXARSINYL ETHERS OF POLYMERIC POLYHYDROXY COMPOUNDS AND PREPARATION

Joseph E. Dunbar, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 1, 1969, Ser. No. 881,285
Int. Cl. C08f *3/34*
U.S. Cl. 260—91.3 VA **20 Claims**

Polymeric polyhydroxy compounds, e.g., cellulose, starch, cellulose loweralkyl ethers, cellulose lowerhydroxyalkyl ethers, cellulose loweralkyl lowerhydroxyalkyl mixed ethers, carboxymethylcellulose and its water-soluble salts and polyvinyl alcohol are reacted with 10,10'-oxybisphenoxarsine to provide corresponding 10-phenoxarsinyl ether derivatives. The 10-phenoxarsinyl ether derivatives exhibit antimicrobial properties.

3,624,063

ETHYLENE POLYMERIZATION USING CATALYST OF CONTROLLED PARTICLE SIZE

Donald R. Witt, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed July 10, 1969, Ser. No. 840,836
Int. Cl. C08f *1/66, 3/06*
U.S. Cl. 260—93.7 **5 Claims**

A process for producing particle-form olefin polymer in which the size of the silica-supported chromium oxide catalyst is selected to regulate the molecular weight distribution of the polymer.

3,624,064

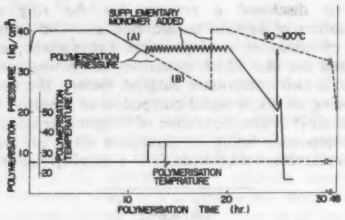
POLYMERIZATION OF FLUOROETHYLENES

Yasushi Toyoda, Nishiki-shi, and Nobuo Bannai, Nishiki-Machi, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed May 3, 1968, Ser. No. 726,366
Claims priority, application Japan, May 15, 1967, 42/30735
Int. Cl. C08f *3/22, 15/06*
U.S. Cl. 260—92.1 **3 Claims**

The temperature in the suspension polymerization of fluoroethylene is maintained below its critical temperature

during the initial period of the process and is raised above the critical temperature after polymer particles have been formed. In a variation of this method, a supplementary quantity of the monomer is added to the process, beginning at the



time the temperature is raised, in a manner to avoid causing large variation in the polymerization pressure. In a further variation of this method, the temperature is raised to a value from 60° to 150° C. in the final period of the polymerization.

3,624,065

WATER-SOLUBLE BASIC TRIALKYL AMMONIUM PHENYLAZOPYRIMIDINE

Bernhard Spiess, Offenbach am Main, and Gunther Trapp, Frankfurt am Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft, vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Dec. 5, 1968, Ser. No. 781,596

Claims priority, application Germany, Dec. 16, 1967, F 54327

Int. Cl. C09b *21/36, 45/00;* **D06p** *1/10*

U.S. Cl. 260—146 D **5 Claims**

Water-soluble basic monoazo dyestuffs of the trialkylammoniumphenylazopyrimidine series which are suitable for dyeing or printing of textile fibrous materials consisting of native or regenerated cellulose, acetate rayon, polyamides, polyesters, polyacrylonitrile or polyvinylidenecyanide to yield yellow dyeings having good fastness to light and wet processing.

3,624,066

2-(8-CYCLOHEXYLOCTYL OR 7-CYCLOHEXYLHEPTYL)-4-(4-SULFOPHENYLAZO)-1-NAPHTHOL

Louis F. Fieser, Belmont; Sydney Archer, Bethlehem, Mass., and Roman R. Lorenz, East Greenbush, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Original application Oct. 25, 1966, Ser. No. 589,204. Divided and this application Oct. 17, 1969, Ser. No. 870,808

Int. Cl. C07c *107/06*

U.S. Cl. 260—197 **2 Claims**

A process of reacting 2-Q-1-naphthol with a diazotized salt of sulfanilic acid to form a 2-Q-4(4-sulfophenylazo)-1-naphthol; reducing the azo compound to form 4-amino-2-Q-1-naphthol; oxidizing said 4-amino compound to form 2-Q-1,4-dihydro-4-imino-1-oxonaphthalene; and hydrolyzing said 4-imino compound under acidic conditions to form 2-Q-1,4-naphthoquinone where Q is (8-cyclohexyloctyl or 7-cyclohexylheptyl).

3,624,067

DISAZOCOMPOUNDS CONTAINING A DICARBOXIMIDO, PYRROLIDINONO, PIPERIDONO, OR PHTHALIMIDINO GROUP

Max A. Weaver, and James M. Straley, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 683,112, Nov. 15, 1967, Continuation-in-part of application Ser. No. 686,834, Nov. 30, 1967. This application Jan. 26, 1970, Ser. No. 5,936

Int. Cl. C09b *31/06, 31/14;* **D06p** *1/08*

U.S. Cl. 260—152 **9 Claims**

Disazocompounds containing a dicarboximido, pyrrolidinono, piperidono or phthalimidino group bonded to a nuclear carbon atom of a benzene diazocomponent and having a phenolic coupling component are useful as dyes for hydrophobic textile materials such as polyester fibers on which the compounds give yellow to orange dyeings which exhibit superior fastness to light and sublimation.

3,624,068

DI(CARBOXYLIC ACID ESTER)-PHENYL-AZO-NAPHTHOL DYES

Johannes Dehnert, and Gerhard Gnad, both of Ludwigshafen, Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Nov. 27, 1968, Ser. No. 779,652

Claims priority, application Germany, Dec. 1, 1967, P 16 44 074.7

Int. Cl. C07c *107/08;* **C09b** *29/30*

U.S. Cl. 260—199 **4 Claims**

Acid dyes derived from aminobenzene dicarboxylic acid esters and 1-hydroxy-7-amino-naphthalene-3-sulfonic acid, particularly for dyeing wool or textile material of synthetic linear polyamides.

3,624,069

PROCESS OF PREPARING A GELLABLE COLLOIDAL CELLULOSE SULFATE AND PRODUCT

Richard G. Schweiger, San Diego, Calif., assignor to Kelco Company, San Diego, Calif.

Continuation-in-part of Ser. No. 347,351, Feb. 26, 1964

Filed June 28, 1965, Ser. No. 467,738

Int. Cl. C08b *5/14*

U.S. Cl. 260—215 **21 Claims**

Water-soluble gellable sulfate esters of cellulose are prepared by soaking cellulose in a lower N-dialkyl amide and then contacting said cellulose with a sulfur trioxide-lower N-dialkyl amide sulfation complex.

3,624,070

GRANULAR GELATINIZABLE QUATERNARY AMMONIUM STARCH ETHERS AND PROCESS OF MAKING SAME

Walter G. Hunt, Bridgeton, Mo., assignor to Anheuser-Busch, Incorporated, St. Louis, Mo.

Original application Apr. 29, 1963, Ser. No. 276,200, now abandoned. Divided and this application Feb. 11, 1966, Ser. No. 526,710

Int. Cl. C08b *19/06*

U.S. Cl. 260—233.3 R **21 Claims**

The invention relates to the preparation of granular, gelatinizable quaternary ammonium starch ethers from starch and an amine alkene halide and to such starch ethers.

3,624,071

OXIDATIVE PREPARATION OF 2,3-DIHYDRO-1,4-BENZODIAZEPINES

Earl Reeder, Nutley, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed May 13, 1968, Ser. No. 728,821
Int. Cl. C07d 41/08
U.S. Cl. 260—239 BD 8 Claims

2,3,4,5-Tetrahydro-benzodiazepines are converted into 2,3-dihydro-1,4-benzodiazepines by treatment with a selected oxidizing agent. Suitable oxidizing agents include diethylazodicarboxylate, quinones such as 2,3-dichloro-5,6-dicyanobenzoquinine, 5,6chloranil and alkali metal hypohalites, such as alkali metal hypoiodites, e.g., sodium hypoiodite.

3,624,072

DERIVATIVES OF 5H-DIBENZ[B,F] AZEPINE-4-CARBOXYLIC ACIDS

Norbert Gruenfeld, Bronx, N.Y., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.

Continuation-in-part of application Ser. No. 693,114, Dec. 26, 1967, and a continuation-in-part of 851,761, Aug. 20, 1969. This application July 13, 1970, Ser. No. 54,603
Int. Cl. C07d 41/08, 87/40, 87/42
U.S. Cl. 260—239 D 15 Claims

5H-Diebenz[b,f]azepines-4-carboxylic acid, the 10,11-dihydro and other substituted derivatives thereof are antiinflammatory agents. They can be prepared, among other ways, through treatment of the appropriate 4,5-oxalyl-5H-dibenz[b,f]azepine with aqueous base followed by hydrogen peroxide. Esterification, N-acylation and/or amidation can optionally follow. Typical embodiments are 3-methoxy-10,11-dihydro-5H-dibenz[b,f]azepine-4-carboxylic acid and 3,7-dichloro-5H-dibenz[b,f]azepine-4-carboxylic acid.

3,624,073

PROCESS FOR PREPARING 5-SUBSTITUTED-1,4-BENZODIAZEPINES

George Francis Field, West Caldwell; Leo Henryk Sternbach, Upper Montclair, and William Joseph Zally, Union City, all of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation-in-part of application Ser. No. 665,716, Sept. 6, 1967, now abandoned. This application Apr. 2, 1968, Ser. No. 718,259
Int. Cl. C07d 41/08
U.S. Cl. 260—239 BD 3 Claims

A process for producing pharmaceutically valuable 5-substituted-1,4-benzodiazepines from 1,4-benzodiazepin-5-ones and intermediates therein.

3,624,074

PROCESS FOR PREPARING N-ACYL URETHANES

Erwin Schmidt, Kelkheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Sept. 3, 1968, Ser. No. 757,092
Claims priority, application Germany, Sept. 4, 1967, P 16 68 013.0
Int. Cl. C07b 103/02; C07d 25/02, 27/08
U.S. Cl. 260—239 A 5 Claims

N-acyl urethanes useful as cocatalysts for lactam polymerization are obtained by reacting organic acid amides, such as carboxylic acid amides, carbamic acid esters or ureas, with trihalogeno-acetic acid esters, whereby trihalogeno-methane is split off. The process is preferably catalyzed by amines, especially by tertiary or sterically hindered amines.

3,624,075

DIBENZAZEPINE ACETIC ACID DERIVATIVES

Konrad Fitzi, Neuallschwil, and Alfred Sallmann, Bottmingen, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,801
Claims priority, application Switzerland, Feb. 29, 1968, 3055/68
Int. Cl. C07d 41/08, 87/38, 87/46
U.S. Cl. 260—239 D 7 Claims

Derivatives of 10,11-dihydro-5H-dibenz[b,f]azepine-acetic acids and salts thereof with a base are prepared by various methods; the compounds have anti-inflammatory, analgesic and antipyretic activity and absorb irritating rays of ultraviolet light; they are the active ingredients of pharmaceutical compositions and are useful for treating inflammatory diseases; an illustrative embodiment is 5-methyl-10,11-dihydro-5H-dibenz[b,f]azepine-3-acetic acid.

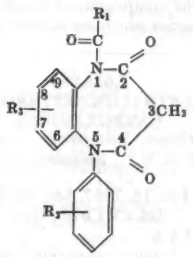
3,624,076

1-ACYL-5-PHENYL-1H-1,5-BENZODIAZEPINE-2,4-[3H,5H]-DIONES

Karl-H. Weber, Gau-Algesheim; Karl Zelle, Ingelheim/Rhine; Rolf Giesemann, Bingen/Rhine, and Peter B. Daimeberg, Ingelheim/Rhine, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

Filed Apr. 28, 1969, Ser. No. 819,940
Claims priority, application Austria, Apr. 29, 1968, A4165/68
Int. Cl. C07d 53/04
U.S. Cl. 260—239.3 17 Claims

1-Acyl-5-phenyl-1H-1,5-benzodiazepine-2,4-[3H,5H]-diones of the formula



wherein R_1 is hydrogen, straight-chain alkyl of one to 15 carbon atoms, halomethyl, methylamino, alkoxy of one to two carbon atoms, cyclohexyl, phenyl, halophenyl, methylphenyl, methoxyphenyl, nitrophenyl, benzyl, styryl or a five-membered heterocyclic ring comprising a sulfur or oxygen atom,
R_2 is hydrogen, halogen, methyl or methoxy, and
R_3 is hydrogen or halogen, methyl or trifluoromethyl in the 7- or 8-position,
which are useful as psychosedatives, muscle relaxants and anticonvulsives in warm-blooded animals.

3,624,077

1,4-PREGNADIENE-11B-HYDROXY-(17A,16A-D)-2'-ALKYLOXA-ZOLINES

Giangiacomo Nathansohn, Milano; Giorgio Winters, Milan, Italy, and Emilio Testa, Tessin, Switzerland, assignors to Lepetit S.p.A., Milan, Italy

Filed Dec. 28, 1966, Ser. No. 605,217
Claims priority, application Great Britain, Jan. 11, 1966, 1,257/66
Int. Cl. C07c 173/00
U.S. Cl. 260—239.55 2 Claims

The invention relates to 1,4-pregnadiene-11β-hydroxy-(17α,16α-d)-2'-alkyloxazolines which have been found to possess antiinflammatory and hormonelike activity.

3,624,078

6H-DIBENZ[B-E]THIEPIN DERIVATIVES

Ernst Jucker, Ettingen/Basel-Land; Adolf J. Lindenmann, Basel, and Fulvio Gadient, Birsfelden Basel-Land, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Dec. 19, 1962, Ser. No. 245,686
Claims priority, application Switzerland, Dec. 21, 1961, 14762/61; Apr. 11, 1962, 4431/62
Int. Cl. C07d 67/00
U.S. Cl. 260—240 TC 16 Claims

Disclosed are aminoalkyldibenzothiepines useful as medicaments, particularly as antihistaminics.

3,624,079

5-(PHENYLSTRYL)-3METHYLISOXAZOLES

Daniel Lednicer, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 20, 1969, Ser. No. 867,937
Int. Cl. C07d 85/22
U.S. Cl. 260—240 D 11 Claims

Novel 5-(α-phenylstyryl)-3-methylisoxazoles, processes for preparing the same and intermediates produced by said processes. The novel compounds of this invention are useful for treating hyperlipemic states in animals, including mammals.

3,624,080

DI-BENZO THIAZINO PYRROLES

Peter Dimroth, Ludwigshafen, and Manfred Gaeng, Roxheim, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Apr. 7, 1969, Ser. No. 814,194
Claims priority, application Germany, Apr. 5, 1968, P 17 69 114.4
Int. Cl. C07d 93/12
U.S. Cl. 260—243 R 3 Claims

New heterocyclic compounds of the di-benzothiazino[2,3-*b*:3′,2′*d*]-pyrrole series which are suitable as pigment dyes.

3,624,081

1-ACYL-2-ETHYLIDENEPYRROL-IDINE-3-CARBOXAMIDES

William B. Dickinson, Loudonville, and Philip C. Lang, Schodack, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Feb. 15, 1967, Ser. No. 616,191
Int. Cl. C07d 27/14
U.S. Cl. 260—247.2 A 16 Claims

Antibacterial 2-ethyl-1-pyrroline-3-carboxamides and derivatives thereof are prepared from either 1-(2-propynyl)-2-pyrrolidinone or 1-(1,2-propadienyl)-2-pyrrolidinone and amines in the presence of base. The carboxamides react with phenyl isocyanates to produce 1-phenylcarbamyl-2-ethyl-2-pyrroline-3-carboxamides, with either an acid halide or acid anhydride to give the corresponding 1-acyl-2-ethylidenepyrrolidine-3-carboxamides and with hydrogen to give the corresponding 2-ethyl-pyrrolidine-3-carboxamides.

3,624,082

PROCESS FOR MAKING 2-HYDROXY-3-ALKOXY QUATERNARY AMMONIUM PROPANE SALTS

Morton Lewis, Skokie, and Thomas W. Findley, La Grange, both of Ill., assignors to Swift & Company, Chicago, Ill.

Filed May 26, 1966, Ser. No. 553,019
Int. Cl. C07d 87/32
U.S. Cl. 260—247.7 A 8 Claims

Quaternary ammonium salts are produced in substantial yields within a reasonable time by reacting, in the presence of water, a tertiary amine and 1-halo, 2-hydroxy, 3-alkoxy propane or by reacting the corresponding tertiary amine hydrohalide and glycidyl ether. The compositions possess surfactant properties and can be used as emulsifying agents, germicides, etc.

3,624,083

BASICALLY SUBSTITUTED 10,5-(EPOXYMETHANO)-10,11-DIHYDRO-5H-DIBENZO[A,D] CYCLOHEPTENES 11

Thomas A. Dobson, St. Laurent, Quebec, and Martin A. Davis, Montreal, Quebec, both of Canada, assignors to American Home Products Corporation, New York, N.Y.

Original application Jan. 1, 1967, Ser. No. 609,788, now Patent No. 3,535,340. Divided and this application Dec. 16, 1969, Ser. No. 885,642
Int. Cl. C07d 87/28
U.S. Cl. 260—247.7 9 Claims

There are disclosed herein a number of 11-substituted 10,5(epoxymethano)-10,11-dihydro-5H-dibenzo[a,d]cycloheptenes in which the substituent is position 11 is a dialkylamino group in which the alkyl groups are the same or different and contain from one-six carbon atoms each, the N-methylbenzylamino, the N-propylphenethylamine, the pyrrolidino, morpholino, derivatives N′-methylpiperazino, or N′-phenylpiperazino group. The intermediate 5-methanol derivatives with the seven substituents in position 11 as listed above are also described. The compounds are useful as trichomonicidal and anticonvulsant agents, and methods for their use as well as a process of preparation are also disclosed.

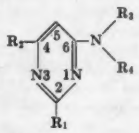
3,624,084

2,4,6-TRISUBSTITUTED DERIVATIVES OF PYRIMIDINE

Jacques Mathieu, Brussels, Belgium, assignor to U.C.B. Societe Anonyme, Saint-Gilles-les Bruxelles, Belgium

Filed Jan. 22, 1968, Ser. No. 699,294
Claims priority, application Great Britain, Jan. 25, 1967, 3,774/67
Int. Cl. C07d 51/42, 87/38
U.S. Cl. 260—256.4 N 7 Claims

New 2,4,6-trisubstituted pyrimidine derivatives of the general formula



in which R_1 is hydrogen, lower alkyl, aralkyl,
R_2 is hydrogen, halogen, lower alkyl, hydroxyalkylamino, omega-aryl-omega-hydroxyalkylamino, morpholino,
R_3 is hydrogen, lower alkyl eventually hydroxyl-substituted, aralkyl,
R_4 is lower alkyl substituted by at least one hydroxyl group separated from N by at least two carbon atoms, or
R_3 and R_4 together with the extranuclear N are morpholino, as well as their salts with inorganic or organic acids.
These compounds are hypotensives, peripheral and coronary vasodilators, diuretics, bronchodilators, spasmolytics and circulatory and respiratory analeptics.

3,624,085

PYRAZINYLTHIOAMIDES

Charles Malen, Fresnes; Bernard Danree, St-Germain en Laye, and Xavier Pascaud, Paris, all of France, assignors to Societe em nom Collictif Science Union Et Cie, Society Francasie De Recherche Medicale, Suresnes, France

Filed July 2, 1969, Ser. No. 838,696
Claims priority, application Great Britain, July 10, 1968, 32,821/68
Int. Cl. C07d 51/76, 51/36
U.S. Cl. 260—250 4 Claims

Ethane thioamides disubstituted in 2-position by Het and R—Het being 2-pyridyl, 2- and 4-pyrimidyl, 2-pyrazinyl, 2- and 4-thiazolyl, which are optionally substituted, and —R being lower-alkyl having up to six carbon atoms inclusive when Het is 2-pyridyl, and when Het is other than 2-pyridyl, R is then, lower-alkyl having up to six carbon atoms inclusive, hydrogen, phenyl, halophenyl, lower alkyl-phenyl or lower-alkyloxy phenyl.
These compounds possess antisecretory and ulceroprotector properties.

3,624,086

ADAMANTANECARBOXAMIDOALKANOIC ACID AMIDES

Carl Peter Krimmel, Wauconda, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Nov. 10, 1969, Ser. No. 875,556
Int. Cl. C07d 51/70
U.S. Cl. 260—268 R 5 Claims

The present adamantanecarboxamidoalkanoic acid amides possess antibiotic activity against a variety of organisms. Thus, they are antibacterial, antiprotozoal, antifungal, antialgal, and anthelmintic agents. In addition, they are antiulcer agents. The compounds can be prepared by the reaction of an adamantanecarboxamidoalkanoyl halide, preferably the chloride, with an appropriate amine.

3,624,087

SYNTHESIS OF ACRONYCINE AND RELATED COMPOUNDS

James R. Beck, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed July 17, 1967, Ser. No. 653,667
Int. Cl. C07d 37/18
U.S. Cl. 260—279 R 3 Claims

The total synthesis of acronycine and related compounds from readily available starting materials is described, as are various classes of intermediates useful in the synthesis.

3,624,088

TRICHLORO-ETHYLIDINE AMINO QUINOLINES

Pal Benko; Zoltan Budai; Laszlo Pallos, and Edit Berenyi, nee Poldermann, all of Budapest, Hungary, assignors to Egyesult Gyogyszer-es Tapszergyar

Filed Apr. 10, 1969, Ser. No. 815,238
Claims priority, application Hungary, Apr. 12, 1968, EE 1505
Int. Cl. C07d 33/52
U.S. Cl. 260—288 3 Claims

Trichloro ethylidine amine derivatives of quinolines, thiazoles and tetrahydronaphthalenes having anthelmonthic and fungicidal activity are disclosed.

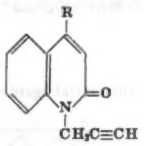
3,624,089

1-(2-PROPYNYL)-R-CARBOSTYRIL

Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 21, 1969, Ser. No. 878,904
Int. Cl. C07d 33/46
U.S. Cl. 260—289 R 3 Claims

The present invention is directed to new compounds corresponding to the formula:



wherein R is hydrogen or lower alkyl groups of from one to about four, both inclusive, carbon atoms. The new compounds of the present invention are suitable for use as herbicides and fungicides, and exhibit depressant activity on the central nervous system.

3,624,090

PREPARATION OF PYRIDINE

Duncan Clark, Norton-on-Tees; Percy Hayden, Norton-on-Tees; Alan Bell, Runcorn, and John Edward Colchester, Runcorn, all of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of application Ser. No. 485,081, Sept. 3, 1965, now abandoned. This application Apr. 7, 1969, Ser. No. 817,251
Int. Cl. C07d 31/08
U.S. Cl. 260—290 10 Claims

There is provided a process for preparing pyridine wherein substituted or unsubstituted glutaraldehydes or precursors thereof are reacted in the liquid phase with ammonium ions in the presence of molecular oxygen and cupric ions and in a medium comprising an alkanoic acid. The alkanoic acid preferably has up to 6 carbon atoms in the alkyl group, such as acetic acid. The cupric ions may be supplied in the form of a salt such as cupric acetate. Conveniently, the reaction temperature is up to 150° C. and the partial pressure of oxygen is at least 0.5 atmospheres.

3,624,091

OXIME-O-CARBONIC ACID ESTERS

Werner Daum, Uerdingen; Heinrich Krimm, Uerdingen; Hans Scheinpflug, Leverkusen; Paul-Ernst Frohberger, Leverkusen, and Ferdinand Grewe, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 12, 1969, Ser. No. 876,141
Claims priority, application Germany, Nov. 16, 1968, P 18 09 385.1
Int. Cl. C07c 131/00, 135/00; A01n 9/20
U.S. Cl. 260—287 R 10 Claims

Oxime-O-carbonic acid esters, i.e., mono and di alkyl and/or phenyl ketoxime-O-carbonic acid, -(di to penta halophenyl), -[([mono and di alkyl and/or phenyl ketoxime-O'-carbonyloxy]-di to penta halo-phenyl-alkyl)-di to penta halophenyl], -diphenyl, and -quinolyl, -esters, which possess fungicidal properties and which may be produced by conventional methods.

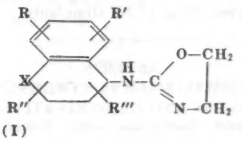
3,624,092

CNS DEPRESSANT AMINO-OXAZOLINE COMPOUNDS, METHODS, AND COMPOSITIONS

George Levitt, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original application June 12, 1967, Ser. No. 646,154, now Patent No. 3,509,170. Divided and this application Mar. 23, 1970, Ser. No. 22,027
Int. Cl. C07d 85/36
U.S. Cl. 260—288 R 2 Claims

Amino-oxazolines useful as central nervous system depressants having the formula:



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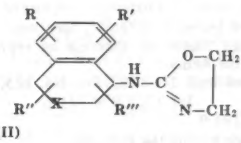


(II)

wherein
X is oxygen, sulfur or methylamino;
R is hydrogen or alkyl;
R′ is hydrogen, alkyl, alkoxy, alkylthio, dimethylamino, fluorine, chlorine or bromine;
R″ is hydrogen or alkyl;
R‴ is hydrogen or alkyl.
Typical is 2-(4-thiochromanylamino)-2-oxazoline useful as a central nervous system depressant.

3,624,093

5,6-DISUBSTITUTED-2,3,5,6-TETRAHYDROIMIDAZO-[2,1-α]ISOQUINOLIN-6-OLS

Theodore S. Sulkowski, Wayne, and Albert A. Mascitti, Norristown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 10, 1970, Ser. No. 18,305
Int. Cl. C07d 35/10
U.S. Cl. 260—288 R 11 Claims

Novel 5,6-disubstituted-2,3,5,6-tetrahydroimidazo-[2,1-α]isoquinolin-6-ols have been prepared which are useful anti-inflammatory agents.

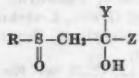
3,624,094

ALPHA-[(PHENYL SULFINYL)METHYL]-ALPHA-PHENYL DERIVATIVES OF PYRIDINEMETHANOLS

Jean A. Gautier; Marcel Y. Miocque; Henri Moskowitz; Janine L. Blanc-Guenee; Guy M. Raynaud, and Micheline Y. Sergant, all of Paris, France, assignors to Delalande S.A., Courbevoie (Hauts-de-Seine, France

Filed Sept. 18, 1969, Ser. No. 859,168
Claims priority, application France, Nov. 15, 1968, 173828
Int. Cl. C07d 31/48
U.S. Cl. 260—294.8 F 2 Claims

A compound of the formula



in which R is methyl or phenyl,
Y is H, substituted or unsubstituted phenyl or a heterocyclic radical,
Z is a substituted or unsubstituted phenyl or a heterocyclic radical,
or

is a mono- or polycyclic radical.
The compounds are prepared by reacting

with an alkali metal amide, in anhydrous liquid ammonia, and then adding

The compounds are useful as analgesics, antiinflammatory agents, antidepressants and CNS stimulants.

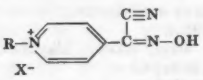
3,624,095

4-CYANOFORMYL-1-ALKYL PYRIDINIUM HALIDE OXIME AND ITS DERIVATIVES

Robert H. Poirier, Columbus, Ohio; Bernard W. Fromm, Edgewood; Edward J. Poziomek, Edgewood; John A. Stein, Parkville, and David N. Kramer, Stevenson, Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Sept. 11, 1962, Ser. No. 223,309
Int. Cl. C07d 31/46
U.S. Cl. 260—294.9 6 Claims

1. Compounds having the formula



where R is an alkyl group of 1 to 4 carbon atoms and X is selected from the group consisting of Cl^-, Br^- and I^-

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3,624,096

PROCESS FOR PRODUCING CERTAIN AMIDE DERIVATIVES OF PYRIDINE AND REDUCING SAID AMIDES TO CORRESPONDING AMINES

Rudolph A. Abramovitch, and George M. Singer, both of Tuscaloosa, Ala., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed June 27, 1969, Ser. No. 837,325
Int. Cl. C07d 31/46
U.S. Cl. 260—294.9 7 Claims

A process is described for the alkylamination or arylamination of five- or six-membered heteroaromatic N-oxides. In the process, a five- or six-membered heteroaromatic N-oxide and an appropriately substituted imidoyl chloride or imidoyl bromide or a nitrilium salt derived therefrom, are heated in an inert polar solvent at reflux temperature for a period of time sufficient to bring the reaction to completion. The amide reaction product, which is thus obtained, is subsequently converted to the amine by conventional hydrolysis procedures.

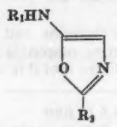
3,624,097

N-PYRIDINE 5-AMINOOXAZOLES

Maximilian Von Strandtmann, Rockaway, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed July 22, 1969, Ser. No. 843,762
Int. Cl. C07d 31/42
U.S. Cl. 260—296 R 4 Claims

The present invention is concerned with compounds of formula I:



I

wherein R_1 is heteroaryl and R_2 is alkyl, aryl, or heteroaryl. Compounds of this invention exhibit central nervous system depressant properties.

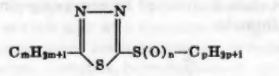
3,624,098

1,3,4-THIADIAZOLES

Melvin Harris Rosen, Madison, and Herbert Morton Blatter, Summit, both of N.J., assignors to CIBA Corporation, Summit, N.J.

Filed June 19, 1969, Ser. No. 834,893
Int. Cl. C07d 91/62
U.S. Cl. 260—302 SD 3 Claims

New 2-sulfinyl- or sulfonyl-1,3,4-thiadiazoles, e.g. those of the formula:



$m=0$-7
$n=1$ or 2
$p=1$-7

and salts thereof are antibacterial agents.

3,624,099

PROCESS OF PREPARING 2 -IMINO-αPHENYL 3-THIAZOLIDINEETHANOL ACID SALTS

Milton Walker Bullock, Hopewell, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 669,733, Sept. 22, 1967, now abandoned , which is a division of application Ser. No. 493,231, Oct. 5, 1965, now abandoned. This application Aug. 4, 1969, Ser. No. 847,392
Int. Cl. C07d 91/16
U.S. Cl. 260—306.7 2 Claims

A method of preparing dl 2-imino-α-phenyl-3-thiazolidineethanol hydrochloride from dl α-phenyl-1-aziridineethanol via the intermediate 2-[(β-hydroxyphenethyl)amino]ethyl thiocyanate, is described. The products are useful as intermediates in the preparation of the anthelmintic dl 6-phenyl-2,3,5,6-tetrahydroimidazo[2,1-b]thiazole.

3,624,100

INSECTICIDAL AND ACARICIDAL 2-PHENYL-BENZIMIDAZOLES

Wilhelm E. Frick, Baselland; Horst Harle, Allschwil; Thomas Wenger, Riehen, and Anton Weiss, Basel, all of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed Apr. 27, 1967, Ser. No. 634,092
Claims priority, application Switzerland, May 6, 1966, 6667/66
Int. Cl. C07d 49/38
U.S. Cl. 260—309.2 6 Claims

New 2-phenyl-benzimidazoles which are substituted by at least three halogen and/or trifluoromethyl radicals none of which, however, is present at the phenyl radical in an orthoposition relative to the link to the benzimidazole moiety, and optionally by further substituents; as well as their alkali metal and alkaline earth metal salts; which compounds are useful as insecticides and acaricides; and insecticidal and acaricidal compositions containing such compounds as active ingredients; a method of controlling insects and acarinae, and of protecting keratinous material from damage by insects or their larvae, with the aid of such novel compounds; as well as keratinous materials protected with the aid of the said compounds.

3,624,101

2,3-DIHYDRO-5-ARYL-5H-BENZ[F]IMIDAZO[2,1-A]ISOINDOL-5-OLS

Theodore S. Sulkowski, Wayne, and Albert A. Mascitti, Norristown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 10, 1970, Ser. No. 18,310
Int. Cl. C07d 49/34
U.S. Cl. 260—309.6 6 Claims

2,3-dihydro-5-aryl-5H-benz[f]imidazo[2,1-a]isoindol-5-ols have been prepared which are pharmacologically active as antidepressant.

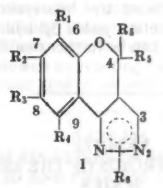
3,624,102

SUBSTITUTED BENZOPYRANOPYRAZOLES

Richard E. Brown, Hanover, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 21, 1969, Ser. No. 826,656
Int. Cl. C07d 49/18
U.S. Cl. 260—310 R 15 Claims

A class of benzopyranopyrazoles of the formula:



I

are disclosed. In the above formula R_1, R_2, R_3, and R_4 are hydrogen, hydroxy, lower alkoxy, or ω-diloweralkylaminoloweralkoxy; R_5 is hydrogen or lower alkyl; R_6 is hydrogen, lower alkyl, aryl, aralkyl, or ω-diloweralkylaminoloweralkyl group. These compounds exert a mild depressant activity on the central nervous system of a mammalian host and are useful in the relief of mild and moderate anxiety.

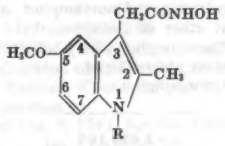
3,624,103

3-INDOLEACETOHYDROXAMIC ACIDS

Franco De Martiis, Turin; Edoardo Arrigoni-Martelli, Milan, and Teresio Tamietto, Turin, all of Italy, assignors to Instituto Biologico Chemioterapico "ABC" S.p.A., Turin, Italy

Filed May 6, 1969, Ser. No. 822,320
Claims priority, application Italy, May 21, 1968, 51749 A/68
Int. Cl. C07d 27/56
U.S. Cl. 260—326.13A 5 Claims

2-methyl-5-methoxy-3-indoleacetohydroxamic acid compounds of the formula:



wherein R is a member selected from the group consisting of hydrogen, phenylmethyl, allyl, vinyl, isopropenyl, benzoyl, chlorobenzoyl, methoxybenzoyl, and thiomethylbenzoyl, and process for preparing same. These compounds exhibit excellent anti-inflammatory, antipyretic and analgesic effects.

3,624,104

ARALKANOYL DERIVATIVES OF DIBENZOXAZEPINE-N-CARBOXYLIC ACID HYDRAZIDES

John W. Cusic, Skokie, Ill., and William E. Coyne, St. Paul, Minn., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Oct. 27, 1969, Ser. No. 869,888
Int. Cl. C07d 87/54, 93/42
U.S. Cl. 260—333 4 Claims

Disubstituted hydrazines wherein the 1-substituent is a dibenzoxazepine carbonyl group or a similar group, and where the 2-substituent is an aralkanoyl group are described herein. The compounds are prepared by reacting hydrazine first with one appropriate acid chloride and then with the second appropriate acid chloride. The compounds are useful as antihypercholesterolemic agents and as anti-inflammatory agents.

3,624,105

METHOD FOR SYNTHESIZING RHODOXANTHIN

Joseph Donald Surmatis, West Caldwell, and Armin Walser, Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Original application Feb. 23, 1967, Ser. No. 617,827, now Patent No. 3,466,331, dated Sept. 9, 1969. Divided and this application May 19, 1969, Ser. No. 826,022
Int. Cl. C07d 13/04
U.S. Cl. 260—340.9 1 Claim

A method by which rhodoxanthin can be synthesized from 3-ethylenedioxy-β-ionone as well as new and novel intermediates produced in the synthesis. Rhodoxanthin is a well-known coloring agent for foodstuffs, including beverages, pharmaceutical and cosmetic preparations.

3,624,106

TETRAHYDROPYRANYL ETHER OF 3-ENDO-METHYL-3-EXO(4'-METHYL-5'-HYDROXYPENTYL) NORCAMPHOR

Wayne I. Fanta, and William F. Erman, both of The Procter & Gamble Co. Miami Valley Lab, Cincinnati, Ohio

Original application Mar. 29, 1968, Ser. No. 717,384, now abandoned. Divided and this application Apr. 6, 1970, Ser. No. 26,061
Int. Cl. C07c 49/30; C07d 7/14
U.S. Cl. 260—345.9 1 Claim

The novel compounds, 2-methyl-5-bromopentyl tetrahydropyranyl ether and tetrahydropyranyl ether of 3-

endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor and a process for preparing 2-methyl-5-bromopentyl tetrahydropyranyl ether, tetrahydropyranyl ether of 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor and 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor comprising the steps of: (1) esterifying 2-methyl-4-pentenol; (2) hydrobrominating the ester in the presence of a free radical catalyst; (3) reducing the hydrobrominated ester to 2-methyl-5-bromopentanol; (4) etherifying 2-methyl-5-bromopentanol with dihydropyran to obtain the novel compound, 2-methyl-5-bromopentyl tetrahydropyranyl ether; (5) alkylating 3-methylnorcamphor with the 2-methyl-5-bromopentyl tetrahydropyranyl ether to obtain the novel compound, tetrahydropyranyl ether of 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor; and (6) treating tetrahydropyranyl ether of 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor with p-toluenesulfonic acid or hydrochloric acid to obtain 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor.

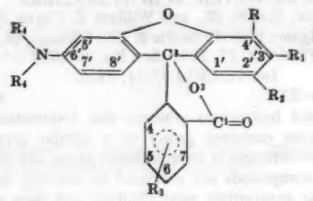
3,624,107

NITRO- AND AMINO-SUBSTITUTED FLUORANS

Chao-han Lin, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Jan. 21, 1969, Ser. No. 792,279
Int. Cl. C07d *5/00*
U.S. Cl. 260—343.3 **6 Claims**

A chromogenic material of normally colorless form is disclosed, having the structural formula:



wherein one of R, R_1, R_2, and R_3 represents nitro- or amino-radical and the remaining other of R, R_1, R_2, and R_3 comprise hydrogen, halogen, phenyl and alkyl radicals and R_4 represents alkyl radicals having less than five carbons; said material assuming a colored form upon reactive contact with a Lewis acid molecule. Examples include 6'-diethylamino-2'-nitrofluoran; 2'-amino-6'-diethylaminofluoran; 6'-diethylamino-3'-methyl-2'-nitrofluoran; 2'-amino-6'diethylamino-3'-methylfluoran; 6'-diethylamino-2'-methyl-4'-nitrofluoran; 4'-amino-6'-diethylamino-2'-methylfluoran; 2'-chloro-6'-diethylamino-3'methyl-5-nitrofluoran; and 6-amino-2'-chloro-6'-diethylamino-3'-methylfluoran.

3,624,108

7-CARBOXYPHTHALIDES

Karl J. Doebel, Ossining, and John E. Francis, Pleasantville, both of N.Y., assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Original application Apr. 23, 1968, Ser. No. 729,487, now Patent No. 3,539,567, Continuation-in-part of application Ser. No. 583,980, Oct. 3, 1966, now abandoned , Continuation-in-part of application Ser. No. 539,303, Apr. 1, 1966, now abandoned , Continuation-in-part of application Ser. No. 445,762, Apr. 5, 1966, now abandoned. Divided and this application Dec. 15, 1969, Ser. No. 889,795
Int. Cl. C07d *5/32*
U.S. Cl. 260—343.3 **4 Claims**

Various derivatives of 8-carboxy-1(2H) phthalazinones are anti-inflammatory agents and chemical intermediates for the preparation of 3-keto-2,3-dihydro-1,2,8,9-tetraazaphenalenes.

3,624,109

EPOXYORGANOFLUOROSILANES AND AMINO-HYDROXY DERIVATIVES THEREOF

Enrico J. Pepe, Kenmore, and Bernard Kanner, Tonawanda, both of N.Y., assignors to Union Carbide Corporation

Original application Oct. 3, 1963, Ser. No. 313,418, now Patent No. 3,334,121. Divided and this application Apr. 6, 1967, Ser. No. 643,771
Int. Cl. C07f *7/12*
U.S. Cl. 260—348 SC **4 Claims**

The invention characterizes novel epoxy organo fluoro silanes wherein the fluorine is directly bonded to silicon.

3,624,110

13-ETHYLGONA-4,9-DIENES

Gordon Alan Hughes, 615 Lanmore Ave., Wayne, Pa.; Herchel Smith, 500 Chestnut Lane, Wayne, Pa., and David Hartley, 1078 Montgomery Ave., Conshohocken, Pa., assignors to said Smith, by said Hughes and said Hartley

Continuation-in-part of application Ser. No. 194,972, May 15, 1962, now Patent No. 3,502,699. This application Aug. 3, 1964, Ser. No. 386,987
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.3 **9 Claims**

This invention is related to 13-ethylgona-4, 9-dien-3-ones and to compositions containing said compounds. The compounds are pharmacologically active and exhibit antiestrogenic, anabolic, pituitary blocking, and progestational effects.

3,624,111

18-LOWER ALKYL ANDROSTENES

John A. Edwards, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama

Continuation-in-part of application Ser. No. 528,398, Feb. 18, 1966, now Patent No. 3,402,173, which is a continuation-in-part of application Ser. No. 441,297, Mar. 19, 1965, now abandoned. This application Mar. 30, 1966, Ser. No. 538,581
Int. Cl. C07c *169/22*
U.S. Cl. 260—397.4 **11 Claims**

18-Lower alkyl androstenes prepared by converting 3β, 20β-dihydroxypregn-5-en-18-oic acid 18,20-lactone 3-acetate into 3β,20β-di-hydroxy-18-alkylpregn-5-en-18-one using lower alkyl magnesium halide which is converted into 18-alkylpregn-5-en-3β,20β-diol via the hydrazone followed by oxidation to afford 18-alkyl-progesterone which is converted into the enol ether and then the 17α-hydroperoxy thereof is treated with, for example, zinc in acetic acid to furnish 18-alkyl-17α-hydroxyprogesterone. This compound upon treatment with lithium tri-t-butoxyaluminum hydride followed by lead tetraacetate yields 3β-hydroxy-18-alkylandrost-4-en-17-one which can be further modified.

3,624,112

LONG-ACTING STEROIDS OF THE ESTROGENIC SERIES

Alberto Ercoli, Milan; Rinaldo Gardi, Carate Brianza (Milan), and Romano Vitali, Casatenovo (Como), all of Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 10, 1969, Ser. No. 884,009
Claims priority, application Italy, Dec. 11, 1968, 24885 A/68
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.5 **42 Claims**

C_7-C_{20} 17-cycloalkenyl ethers of estradiol 3-benzoate or substituted benzoate having prolonged contraceptive and estrogenic activity are obtained by reacting estradiol 3-benzoate or substituted benzoate with a functional derivative of a cyclic ketone at a temperature higher than 70° C.

3,624,113

LONG-ACTING ESTRADIOL DERIVATIVES

Alberto Ercoli, Milan; Rinaldo Gardi, Carate Brianza (Milan), and Romano Vitali, Casatenova (Como), all of Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 10, 1969, Ser. No. 884,008
Claims priority, application Italy, Dec. 11, 1968, 24887 A/68
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.5 5 Claims

C_7—C_{12} and C_{15}—17-cycloalkenyl ethers of estradiol-3-alkanoyl ester having contraceptive and estrogenic activity are obtained by reacting estradiol-3-alkanoyl-ester with a functional derivative of a cyclic ketone at a temperature higher than 70° C.

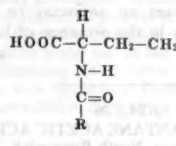
3,624,114

FATTY ACID AMIDO-METHIONINE PRODUCTS

Jean V. Morelle, 170 Avenue Parmentier, 75 Paris, 10 ime, France

Continuation-in-part of application Ser. No. 672,975, Oct. 5, 1967, now abandoned. This application Dec. 18, 1969, Ser. No. 886,384
Int. Cl. C08h *3/00*
U.S. Cl. 260—402.5 4 Claims

Water-insoluble, lipo-soluble compounds consisting of fatty acid amido-methionines of the formula:



wherein R is an aliphatic hydrocarbon chain of five to 29 carbon atoms. These compounds are especially useful in therapeutic and cosmetic preparations to be applied to human phaners, i.e. finger nails and hair.

3,624,115

COORDINATED COMPLEXES OF NITROGENOUS COMPOUNDS

Ferdinand P. Otto, Woodbury, and Andreas Logothetis, Haddonfield, both of N.J., assignors to Mobil Oil Corporation

Continuation-in-part of application Ser. No. 585,253, Oct. 10, 1966. This application Mar. 24, 1970, Ser. No. 22,400
Int. Cl. C10m *1/40*; C07f *3/06, 15/04*
U.S. Cl. 260—429.9 13 Claims

Metal complexes useful in organic fluids to impart detergency and neutralizing properties thereto are obtained by reacting an alkylene polyamine with a monocarboxylic acid or anhydride, followed by reacting the product thus obtained with an alkylsuccinic acid or anhydride and a metal salt.

3,624,116

NICKEL DERIVATIVES OF METHYLENE BIS-SALICYLIC ACID AND PROCESS FOR PREPARING THE SAME

Laird Gordon Lindsay Ward, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,653
Int. Cl. C07f *15/04*
U.S. Cl. 260—439 R 9 Claims

Nickel derivatives of methylene bis-salicylic acid are prepared in which methylene bis-salicylic acid, a Group Ia metal alkoxide and a nickel salt are reacted in an essentially nonaqueous environment, and the nickel derivatives are precipitated from solution. Nickel methylene bis-salicylate is effective as a light stabilizing additive in polymers such as polyvinylchloride.

3,624,117

COMPOUNDS PREPARED FROM ALUMINIUM HYDRIDE-TRIALKYL AMINE AND DECABORANE

Edward J. Bartoszek, Norristown, Pa., and Donald J. Mangold, New Haven, Conn., assignors to Olin Mathieson Chemical Corporation

Filed Aug. 30, 1961, Ser. No. 135,411
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 R 7 Claims

1. Organo metallic compounds of the formula:
$[R_3N{\cdot}AlH_2]_2B_{10}H_{12}$,
wherein R is an alkyl group having from one to five carbon atoms.

3,624,118

REACTION PRODUCTS OF ALKALI METAL AMIDES AND TRIALKYL ALUMINUM COMPOUNDS

Stelvio Papetti, Hamden, Conn., assignor to Olin Mathieson Chemical Corporation

Filed Aug. 9, 1961, Ser. No. 130,433
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 A 11 Claims

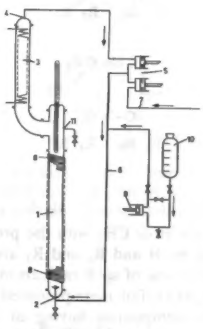
1. Organo aluminum compounds of the formula:
$M[NH_2\ AlR_3]$
Wherein M is an alkali metal and R is an alkyl group having one to eight carbon atoms.

3,624,119

PROCESS OF MAKING ALKYLTRIHALOGENOSILANES

Wilfried Rothe, Strotzbach, and Hans Pfleger, Neu-Isenberg, both of Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 803,125, Feb. 7, 1969, abandoned
Filed May 29, 1969, Ser. No. 829,035
Claims priority, application Germany, Feb. 9, 1968, P 16 43 926.2
Int. Cl. B01j *11/64*; C07f *7/02*
U.S. Cl. 260—448.2 E 7 Claims



Alkyltrihalogenosilanes are made by reacting a trihalogenosilane with a gaseous olefin at a temperature between 30° and 150° C. and normal pressure in the presence of a platinum metal catalyst.

3,624,120

QUATERNARY AMMONIUM SALTS OF CYCLIC SILOXANE POLYMERS

Jerry J. Yetter, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 22, 1969, Ser. No. 887,454
Int. Cl. C07f *7/10*
U.S. Cl. 260—448.2 N 9 Claims

The siloxane linkages present in salts of the compound [bis-(trialkyl siloxy)-alkyl-2-(trialkyl ammonio)-alkyl

silane]are rearranged in water to form quaternary ammonium salts of cyclic siloxane polymers useful as cationic surfactants, bactericides, and anticariogenic agents.

3,624,121

NEW CHELATES OF SILICON

Terry G. Selin, Schenectady, N.Y., assignor to General Electric Company

Original application Jan. 3, 1969, Ser. No. 788,948. Divided and this application July 20, 1970, Ser. No. 56,663
Int. Cl. C07f 7/04, 7/18
U.S. Cl. 260—448.8 R 3 Claims

New organosilicon chelates are formed from diketones and derivatives of diketones, where the silicon atom has functional substituents other than the diketone compound residue. The materials are useful as curing agents for room temperature vulcanizing materials.

3,624,122

ALICYCLIC DIISOCYANATES

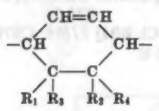
Marwan R. Kamal; John R. Nazy, and Donald H. Wheeler, all of Minneapolis, Minn., assignors to General Mills, Inc.

Filed June 24, 1966, Ser. No. 560,112
Int. Cl. C07c 87/34, 119/04; C08c 22/24
U.S. Cl. 260—453 A 9 Claims

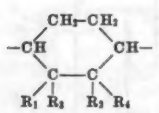
Diisocyanates of the formula

$R'—Z—R''—CH_2NCO$

where R′ is a monovalent straight chain saturated or ethylenically unsaturated aliphatic hydrocarbon radical containing 2 to 6 carbon atoms, R″ is a divalent straight chain saturated or ethylenically unsaturated hydrocarbon radical containing 7 to 11 carbon atoms, the sum of the carbon atoms in R′ and R″ is 13, and Z is a divalent radical of the structure



or



where R_1 and R_2 are H or CH_3 with the proviso that one of such radicals must be H and R_3 and R_4 are H or CH_2NCO with the proviso that one of such radicals must be H and the other must be CH_2NCO. Polymers prepared by reacting such diisocyanates with compounds having at least two active hydrogen atoms as determined by the Zerewitinoff method.

3,624,123

T-ALKYL PERESTERS OF T-HYDROPEROXIDES

Roger N. Lewis, Pinole, and Ronald L. Friedman, San Rafael, both of Calif., assignors to Argus Chemical Corp., Brooklyn, N.Y.

Filed May 1, 1968, Ser. No. 725,931
Int. Cl. C07c 79/00
U.S. Cl. 260—453 R 13 Claims

Tertiary alkyl peresters of tertiary hydroperoxides useful as polymerization initiators characterized by the tertiary alkyl group of the acid moiety having at least one alkyl group of two or more carbon atoms. The peresters are particularly efficient in the polymerization of certain vinyl monomers such as vinyl chloride.

3,624,124

N-ADAMANTYL AMIDES

Seymour D. Levine, and Venkatachala L. Narayanan, both of North Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 837,000, June 26, 1969, now abandoned. This application Feb. 27, 1970, Ser. No. 15,205
Int. Cl. C07c 103/30, 103/32; C07d 25/02
U.S. Cl. 260—465 D 2 Claims

Adamantyl lactams are prepared by reacting an adamantyl amine with a 3-, 4-, or 5-halo acyl halide to yield an adamantyl amine haloamide followed by base cyclization of the latter. These adamantyl lactams possess antiviral and antibacterial activities.

3,624,125

PREPARATION OF ALIPHATIC DINITRILES BY AMMOXIDATION OF HYDROCARBONS

Clive Barnett; John Dewing, and Anthony Howden Jubb, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 25, 1968, Ser. No. 770,827
Claims priority, application Great Britain, Nov. 6, 1967, 50,336/67
Int. Cl. C07c 121/02
U.S. Cl. 260—465.3 5 Claims

A process for the preparation of aliphatic dinitriles, particularly adiponitrile, by reacting methylcyclohexane with ammonia and oxygen over an antimony or molybdenum oxide catalyst, optionally in the presence of halogen at the catalyst surface.

3,624,126

Δ^2, α-ADAMANTANE ACETIC ACID

Venkatachala L. Narayanan, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 854,724, Sept. 2, 1969, now abandoned. This application May 4, 1970, Ser. No. 34,909
Int. Cl. C07c 61/28, 69/74
U.S. Cl. 260—468 B 4 Claims

1-Azacyclopentano[1,2-a]adamantane compounds and derivatives thereof which have antiviral and anti-inflammatory properties and which are useful cardiovascular agents may be prepared starting from 2-adamantanones or substituted 2-adamantanones and proceeding through a series of intermediate compounds to the corresponding 1-azacyclopentano[1,2-a]-adamantanes. Derivatives may be obtained by reacting the latter with an alkyl or alkenyl halide, haloalkylamine or a haloalkyl substituted amine, a haloalkylcarboxylic acid, an aralkyl halide of up to 10 carbon atoms, or a haloalkyladamantylamine or haloalkyl substituted adamantylamine. The 2-adamantane alkylamine intermediates for the 1-azacyclopentano-[1,2-a]adamantane compounds also have antiviral and anti-inflammatory properties and are useful cardiovascular agents.

3,624,127

BASIC ESTERS OF CYCLOHEXYLIDENEACETIC ACIDS AND INTERMEDIATES

Philip E. Shaw, Winter Haven, Fla.; Sol J. Daum, Albany, and Robert L. Clarke, Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Oct. 11, 1966, Ser. No. 585,759
Int. Cl. C07c 69/74
U.S. Cl. 260—468 R 7 Claims

Cyclohexanone, optionally substituted in the 2-position by lower-alkyl and/or in the 4-position by hydroxy or acyloxy, reacts with a trilower-alkyl α-phosphono-lower-alkanoate to give a lower-alkyl Δ^1, -cyclohexaneacetate or corresponding derivative thereof. The latter is hydrolyzed to the free acid, which, via the acid chloride, is esterified with an amino-lower-alkanol, giving basic esters having cardiovascular and antidepressant properties.

3,624,128
POLYHYDRO-2-NAPHTHYLIDENEACETIC ACIDS AND BASIC ESTERS THEREOF

Philip E. Shaw, Winter Haven, Fla.; Dol J. Daum, Albany, and Robert L. Clarke, Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Oct. 11, 1966, Ser. No. 585,756
Int. Cl. C07c *69/74*
U.S. Cl. 260—468 F **8 Claims**

3,4,4aα,5,6,7,8,8aβ-octahydro-2(1H)-naphthalenone, optionally substituted in the 6-position by oxo, hydroxy or acyloxy, reacts with a tri-lower-alkyl α-phosphono-lower-alkanoate to give the corresponding lower-alkyl octahydro-2-naphthylideneacetate. The latter is hydrolyzed to the free acid, which, via the acid chloride, is esterified with an amino-lower-alkanol, giving basic esters having cardiotonic activity.

3,624,129
COMPOUNDS CONTAINING A FLUORODINITROMETHYL GROUP

Mortimer J. Kamley, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 13, 1965, Ser. No. 480,258
Int. Cl. C07c *79/46*
U.S. Cl. 260—471 R **1 Claim**

1,7 A compound selected from the group consisting of 2-Fluoro-2,2-Dinitroethanol, 2-Fluoro-2,2-Dinitroethyl-4,4,4-Trinitrobutyrate, 2-Fluoro-2,2,-Dinitroethyl-3,5-Dinitrobenzoate, α-Fluoro-α, α-Dinitrotoluene and αFluoro-α α, 3-Trinitrotoluene. A process for producing a compound containing a fluorodinitromethyl group which comprises reacting the alkali metal salt of the compound selected from the group consisting of 2,2-dinitroethanol and α, α, -dinitrotoluene with perchloryl fluoride to produce the corresponding fluorodinitro derivative.

3,624,130
SUBSTITUTED MALONIC ACID HYDRAZIDES AND PROCESS OF MAKING SAME

Kurt Klemm, Konstanz; Wolfgang Pruesse, Konstanz; Wolfgang Schoetensack, Hegne; Erhard Langenscheid, Konstanz, and Juergen Vogel, Konstanz, all of Germany, assignors to Byk-Gulden Lomberg, Chemische Fabrik G.m.b.H., Konstanz/ Bodensee, Germany

Filed Jan. 19, 1966, Ser. No. 521,490
Claims priority, application Germany, Jan. 22, 1965, B 80231
Int. Cl. C07c *125/04*
U.S. Cl. 260—471 A **27 Claims**

Substituted malonic acid hydrazides in which at least one of the hydrogen atoms of the malonic acid moiety is substituted and wherein the hydrazide group contains phenyl substituents attached to the nitrogen atoms, and compositions containing the same; these compounds are useful in weed eradication and in the treatment of arthritis.

3,624,131
SUBSTITUTED 4,4'-(DIPHENYLMETHYLENE) DIPHENOLS

Hans-Dieter Becker, Schenectady, N.Y., assignor to General Electric Company

Filed Sept. 13, 1966, Ser. No. 578,987
Int. Cl. C07c *39/16*
U.S. Cl. 260—473 G **10 Claims**

Bisphenols are disclosed which have four phenyl groups attached to a central aliphatic carbon atom, at least two and up to four of the phenyl groups having hydroxyl groups in the para position relative to the attachment to the central aliphatic carbon atom. The bisphenols are prepared by a photochemical process involving the reaction between a fuchsone and a phenol. The products are useful as antioxidants, polymerization inhibitors and as reactants for the preparation of polyesters and polycarbonate polymers.

3,624,132
ETHYL 2-(5-FORMYLPENTYL)-4,6-DIMETHOXYBENZOATE

Wilbert H. Urry, Chicago, Ill., assignor to Commercial Solvents Corporation, New York, N.Y.

Filed Jan. 30, 1967, Ser. No. 612,340
Int. Cl. C07c *69/74, 69/92*
U.S. Cl. 260—473 R **1 Claim**

This application relates to 2-(5 carboxypentyl)-4, 6-dimethoxybenzoic acid, to intermediates useful in its preparation, and to methods for its preparation.

3,624,133
LIQUID ESTERS OF NAPHTHALENE DICARBOXYLIC ACIDS

Robert H. Reitsema, 406 Orchard Lane, Findlay, Ohio, and Nylen L. Allphin, Jr., 2657 Wright Ave., Pinole, Calif.

Continuation-in-part of application Ser. No. 292,495, July 2, 1963, now abandoned , Continuation-in-part of application Ser. No. 144,527, Oct. 12, 1961, now abandoned. This application Apr. 22, 1966, Ser. No. 544,419
Int. Cl. C07c *69/76*
U.S. Cl. 260—475 FR **16 Claims**

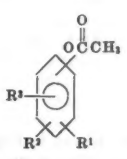
The present invention comprises esters selected from the group consisting of esters of 1,6-naphthalene dicarboxylic acid and an aliphatic hydrocarbon alcohol having four to eight carbon atoms; esters of 2,3-naphthalene dicarboxylic acid and an aliphatic hydrocarbon alcohol containing five to eight carbon atoms; and esters of a naphthalene dicarboxylic acid and a branch chain alkane alcohol having at least two carbon atoms in the branch when the branch is closer to the hydroxyl-substituted carbon atom than the gamma position.

3,624,134
PREPARATION OF ALKYLATED BENZENE ACETATE

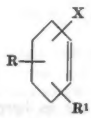
Mahmoud S. Kablaoui, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 15,297
Int. Cl. C07c *69/14*
U.S. Cl. 260—479 R **5 Claims**

A method of preparing an alkylated benzene compound of the formula:



where R^2 and R^3 are alkyl of from one to 20 carbons and R^1 is hydrogen or alkyl of from one to 20 carbons comprising contacting a gem polyalkylated cyclohexenone of the general formula:



where R is said R^2 and R^3 is gem position to one another, R^1 is as heretofore defined, X is keto oxygen, with a mixture of concentrated sulfuric acid and acetic anhydride.

3,624,135
PREPARATION OF BENZENE DIACETATES

Mahmoud S. Kablaoui, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 15,300
Int. Cl. C07c *69/16*
U.S. Cl. 260—479 R **6 Claims**

A method of preparing a benzene diacetate of the formula:

where R is alkyl or hydrogen comprising contacting a cyclohexanedione of the formula:

where R is as heretofore defined and Y is keto oxygen with a mixture of concentrated sulfuric acid and acetic anhydride.

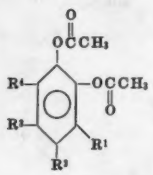
3,624,136

METHOD OF PREPARING CATECHOL DIACETATES

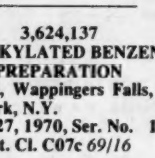
Mahmoud S. Kablaoui, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 15,299
Int. Cl. C07c *69/16*
U.S. Cl. 260—479 R 4 Claims

A method of preparing a catechol diacetate of the formula:



where R^1, R^2, R^3 and R^4 are hydrogen or alkyl comprising contacting 2-acetoxycyclohexanone of the formula:



where R^1, R^2, R^3 and R^4 are as heretofore defined, with acetic anhydride, preferably in admixture with acetic acid, in the presence of boron trifuloride etherate, subsequently contacting the resultant mixture with concentrated sulfuric acid.

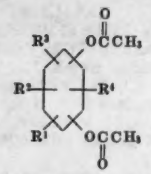
3,624,137

NON-GEM POLYALKYLATED BENZENE DIACETATE PREPARATION

Mahmoud S. Kablaoui, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 15,298
Int. Cl. C07c *69/16*
U.S. Cl. 260—479 R 3 Claims

A method of preparing a non-gem polyalkylated benzene diacetate of the general formula:



where R^1 and R^2 are alkyl and R^3 and R^4 are both hydrogen or alkyl comprising contacting with a mixture of concentrated sulfuric acid and acetic anhydride, a gem polyalkylated cyclohexanedione of the general formula:

where X represents said R^1 and R^2 in gem position, Y represents said R^3 and R^4 in gem position, and Z represents keto oxygen.

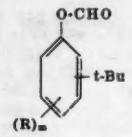
3,624,138

PHENOL FORMATES

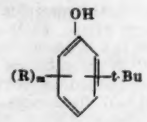
Keisuke Murayama; Shyoji Morimura; Takao Yoshioka, and Hideo, Horiuchi, all of Tokyo, Japan, assignors to Sankyo Company Limited, Chuyuo-ku, Tokyo, Japan

Filed Sept. 29, 1966, Ser. No. 583,055
Claims priority, application Japan, Oct. 7, 1965, 40/61562; Oct. 7, 1965, 40/61563
U.S. Cl. 260—479 R 5 Claims

New phenol formates of the formula



wherein R is a straight or branched alkyl, *m* is O to 3 and t-Bu is tert-butyl. Such phenol formates are prepared by reacting an alkyl phenol of the formula



wherein R, *m* and t-Bu are as defined above with (A) a formamide derivative and a chloride or (B) formic acid in the presence of an esterification catalyst. The phenol formates are superior antidegradants and stabilizers.

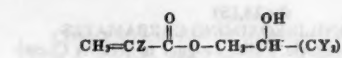
3,624,139

ACRYLIC ACID ESTERS

Pauls Davis, Gibraltar, and Herwart C. Vogt, Grosse Ile, both of Mich., assignors to BASE Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of application Ser. No. 535,049, Mar. 17, 1966, now abandoned. This application Jan. 2, 1969, Ser. No. 788,644
Int. Cl. C01c *69/54*
U.S. Cl. 260—486 H 5 Claims

A halogen containing ester composition of matter, and process for preparing same, having a structure depicted by the following formula:



wherein Z is selected from the group consisting of hydrogen and methyl group, Y is selected from the group consisting of hydrogen and halogen having an atomic weight of 19 to 80, inclusive, X is halogen having an atomic weight of 19 to 80, inclusive, and *n* is selected from 0 and 1.

3,624,140

PREPARATION OF HALOGENATED CARBOXYLIC ACID ESTERS

William C. Baird, Jr., Woodbridge, N.J., assignor to Esso Research and Engineering Company

Filed June 19, 1964, Ser. No. 376,585
Int. Cl. C07c *67/04*
U.S. Cl. 260—489 14 Claims

Halogenated esters of carboxylic acids are prepared by reacting a nontertiary olefinic hydrocarbon with a carboxylic acid salt, a cupric halide and palladium chloride in the presence of an anhydrous solvent.

3,624,141

PRODUCTION OF VINYL ACETATE FROM ETHYLENE USING A LIQUID REACTION MEDIUM CONTAINING A PALLADIUM COMPOUND CATALYST

Harry B. Copelin, Niagara Falls, N.Y., assignor to E. I. du Pont de Nemours, Wilmington, Del.

Filed Feb. 19, 1968, Ser. No. 706,670
Int. Cl. C07c *67/04*
U.S. Cl. 260—497 A 8 Claims

A method for producing vinyl acetate wherein a liquid composition consisting essentially of acetic acid, up to 20 percent water, a palladium II compound and copper and sodium or potassium salts providing acetate and chloride or bromide anions and also the anion of a strong acid whose pK is not greater than 4 is continuously cycled between a first stage where it is reacted with ethylene to produce vinyl acetate and a second stage where it is reacted with oxygen, and wherein the vinyl acetate product is separated from the liquid composition between the first and second stages.

3,624,142

SUBSTITUTED BIPHENYL ACETIC ACID DERIVATIVES

Tsung-Ying Shen, Westfield; Conrad P. Dorn, Jr., Plainfield, and Bruce E. Witzel, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sept. 10, 1964, Ser. No. 395,553
Int. Cl. C07c *63/52*, *69/76*
U.S. Cl. 260—515 A 3 Claims

The invention relates to new substituted biphenyl acetic acids and derivatives thereof. These novel compounds are useful as antiinflammatory agents and for the control of arthritic conditions.

3,624,143

COMPOUNDS OF THE CLASS β-ARALKYLTHIO-SUBSTITUTED-α-AMINO ACIDS

Tsung-Ying Shen, Westfield; Gordon L. Walford, Westfield, and Conrad P. Dorn, Jr., Plainfield, all of N.J., assignors to Merck & Co.

Filed May 10, 1968, Ser. No. 728,351
Int. Cl. C07c *149/42*
U.S. Cl. 260—516 8 Claims

β-Aralkylthio-substituted-α-amino acids and derivatives thereof useful as antiinflammatory agents are described.
A process for preparing some of these amino acids by reaction of the corresponding aldehydes or ketones in the Strecker or hydantoin synthesis is shown.

3,624,144

ZEARALENONE INTERMEDIATES AND THEIR PREPARATION

Norman L. Wendler, Summit; David Taub, Metuchen, and Narindar Nath Girotra, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 18, 1967, Ser. No. 609,995
Int. Cl. C07c *65/02*
U.S. Cl. 260—521 5 Claims

d,1-zearaleneone and mono- and diethers thereof, compounds having anabolic, estrogenic and fertility control properties, are prepared by a total chemical synthesis. An aromatic ring component, a diether of 2-formyl-4,6-dihydroxy benzoic acid, is prepared by selective reduction of a diether of 3,5-dihydroxy phthalic anhydride; an aliphatic component, 2-loweralkoxy-6-methyltetrahydropyran-2-butyl triphenyl phosphonium halide, is prepared via a sequence of reactions involving the condensation of 2-hydroxyhexanoic acid-δ- lactone with pent-4-enyl magnesium bromide, subsequent treatment with alcoholic acid to form 2-(pent-4-enyl)-2-loweralkoxy-6-methyl tetrahydropyran, which substance is in turn ozonized, reduced with alkali metal borohydride, reacted with an alkyl or aryl sulfonyl halide, and then with sodium bromide or iodide to afford 2-(δ-halobutyl)-2-loweralkoxy-6-methyl tetrahydropyran, which latter substance is reacted with triaryl phosphine to afford the above-stated aliphatic component. The aromatic and aliphatic components are coupled and the resulting 1-(3,5-diether-6-carboxyphenyl)-10-hydroxy-1-undecen-6-one ring-closed with trifluoroacetic anhydride to yield d,1-zearalenone diether, which is cleaved with boron tribromide or pyridine hydrochloride to d,1-zearaleneone.

3,624,145

PURIFICATION OF TEREPHTHALIC ACID BY LIQUID-LIQUID EXTRACTION

Marvin S. Brinn, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 17, 1969, Ser. No. 799,986
Int. Cl. C07c *51/48*
U.S. Cl. 260—525 8 Claims

Purifying terephthalic acid by liquid-liquid extraction wherein an aqueous solution of crude terephthalic acid is contacted with a water-immiscible liquid organic extractant inert to terephthalic acid at elevated temperatures to form an aqueous phase and organic phase, subsequently separating the two phases and recovering purified terephthalic acid.

3,624,146

PROCESS FOR THE PRODUCTION OF ACRYLIC ACID FROM PROPYLENE

R. Parthasarthy, Takoma Park; Robert M. Dobres, Silver Spring, and John L. Warthen, Baltimore, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Aug. 25, 1965, Ser. No. 482,487
Int. Cl. C07c *57/04*
U.S. Cl. 260—533 N 1 Claim

A vapor phase method of oxidizing alpha mono-olefinic hydrocarbon to the corresponding alpha beta unsaturated monocarboxylic acid in a single stage. The process is characterized by the use of a bismuth promoted cobalt-molybdate catalyst having a gram atom ratio of bismuth to molybdenum of from 0.05 to 0.15 and a cobalt to bismuth ratio in the range of 5:1 to 20:1.

3,624,147

PREPARATION OF ACRYLIC ACID

Reginald David, and Jean Estienne, both of Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

Filed May 20, 1969, Ser. No. 826,298
Claims priority, application France, May 21, 1968, 152605
Int. Cl. C07c *57/04*
U.S. Cl. 260—533 N 7 Claims

Acrylic acid is prepared by oxidizing propylene with air in the presence of water and a platinum, rhodium, ruthenium or

palladium metal catalyst at a temperature above 50° C. and a pressure exceeding 5 bars gauge. A supported palladium catalyst is preferred. Acrylic acid is obtained in about 60 percent yield based on propylene converted and the small amounts of acrolein obtained may be oxidized to acrylic acid.

3,624,148

RECOVERY OF MALEIC ACID FROM ITS GASEOUS MIXTURES WITH ACETIC ACID

Sadayoshi Ninagawa; Takashi Yamashita, and Tetsuya Kato, all of Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed June 3, 1970, Ser. No. 43,029
Claims priority, application Japan, June 13, 1969, 44/46097
Int. Cl. C07c *57/14*
U.S. Cl. 260—537 N **6 Claims**

Maleic acid values are recovered from a gas mixture essentially consisting of maleic acid, acetic acid, and an inert carrier gas, such as the product obtained by catalytic oxidation of certain petroleum refinery gases or natural gas fractions with air, by passing the gas mixture through a strong solution of acetic acid at a temperature between 60° C. and the boiling point, and preferably at 70° to 85° C. If the solution is sufficiently concentrated to be in acetic acid equilibrium with the gaseous mixture at such a temperature, it retains practically the entire maleic acid and none of the acetic acid from the gas mixture, so that maleic acid values in the form of maleic acid, fumaric acid, or maleic anhydride may be recovered from the absorption liquid.

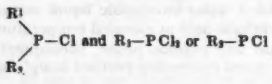
3,624,149

PROCESS FOR SEPARATING ORGANIC CHLOROPHOSPHINES

Otto Bretschneider, Bonn; Heinz Harnisch, Lovenich, near Cologne, and Werner Klose, Knapsack, near Cologne, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany

Filed Apr. 29, 1968, Ser. No. 724,894
Claims priority, application Germany, May 11, 1967, K 62257
Int. Cl. C07f *9/52*
U.S. Cl. 260—543 P **5 Claims**

Separation of mixtures of organic monochlorophosphines and dichlorophosphines of the general formulas:



in which R_1 and R_2 being identical with or different from one another stand for alkyl radicals having one to three carbon atoms comprising saturating the mixtures with gaseous hydrogen chloride, separating from one another the resulting two liquid phases, which include a specifically lighter phase-I and a specifically heavier phase-II, the phase-I containing substantially the dichlorophosphine and the phase-II containing substantially the monochlorophosphine, isolating the dichlorophosphine from the phase-I, and isolating the monochlorophosphine from the phase-II.

3,624,150

POLYHALO-(SULFONIC ACID ANILIDES)

Johann Albrecht Renner, Leverkusen; Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 24, 1969, Ser. No. 801,823
Claims priority, application Germany, Mar. 1, 1968, P 16 68 104.2
Int. Cl. C07c *143/78*
U.S. Cl. 260—556 AR **4 Claims**

Polyhalo-(sulfonic acid anilides), i.e. 2,4- and 3,4-dichlorobenzene-sulfonic acid (2'-chloro or bromo- -3',5'-di- and 3',4',5-tri--chloro)-anilides which possess strong herbicidal properties, especially with respect to submersed aquatic plants, and which may be produced by conventional methods.

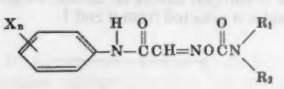
3,624,151

GLYOXYLANILIDEOXIMINO CARBAMATES

Arnold D. Gutman, Pincle, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Oct. 16, 1967, Ser. No. 675,306
Int. Cl. C07c *103/33*
U.S. Cl. 260—557 R **18 Claims**

New compounds corresponding to the formula:



in which R_1 and R_2 are, independently, hydrogen, lower alkyl, allyl, and cycloalkyl having from three to six carbon atoms, inclusive; X is halogen or lower alkyl having one to four carbon atoms, inclusive; and n is an integer having a value from 0 to 4, inclusive. The above compounds are effective herbicides, particularly for the control of grasses and broadleaf plants, with both preemergence and post-emergence activity. Representative compounds are: glyoxylanilideoximino-N'-allyl carbamate, glyoxylanilideoximino-N'-n-butyl carbamate, glyoxyl-3,4-dichloroanilideoximino-N'-methyl carbamate, and glyoxylanilideoximino-N'-n-propyl carbamate.

3,624,152

PERFLUORO-β-THIAGLUTARIC AMIDE

Yung Ki Kim, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of application Ser. No. 739,155, June 24, 1968, now abandoned. This application Feb. 6, 1970, Ser. No. 9,436
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 S **1 Claim**

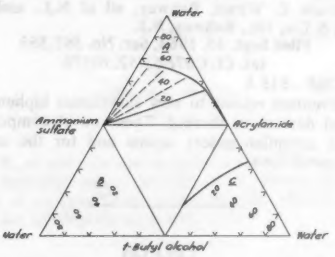
$H_2NOCCF_2SCF_2CONH_2$ is disclosed as being useful as lubricants additives.

3,624,153

SEPARATION OF ACRYLAMIDE FROM ACRYLAMIDE SULFATE

Edward J. Lynch, Danville, and William J. Flom, Walnut Creek, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 5, 1970, Ser. No. 16,728
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 N **3 Claims**



In the process for making acrylamide by reacting acrylonitrile with concentrated sulfuric acid and neutralizing the resulting acrylamide sulfate with ammonia, efficient separation of acrylamide is obtained by adding a relatively small amount of tert-butyl alcohol or a propanol to the neutralized mixture. The mixture thereby obtained separates into an alcohol layer which is largely an alcoholic solution of acrylamide with some water present, an aqueous phase which is essentially a saturated solution of ammonium sulfate, and solid ammonium sulfate.

3,624,154

CONCENTRATION OF AQUEOUS ACRYLAMIDE

Lanny A. Robbins, and Edward R. Winkler, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 26, 1970, Ser. No. 23,080
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 N 8 Claims

Aqueous solutions containing up to about 25 percent by weight of acrylamide are concentrated to a maximum concentration of about 30 percent by cooling the less concentrated solutions to produce a mush of ice crystals and separating the ice from the mother liquor. Adiabatic cooling under reduced pressure is preferred.

3,624,155

DIFLUOROAMINO SUBSTITUTED CYCLOHEXANE

Andrew Harper Dinwoodie, Dalry, and James Grigor, Coatbridge, both of Scotland, assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 27, 1962, Ser. No. 240,772
Claims priority, application Great Britain, Nov. 30, 1961, 42,971/61
Int. Cl. C07c *85/08*
U.S. Cl. 260—563 R 2 Claims

1. A process for the preparation of the bis(difluoramino) compounds which comprises reacting consisting of a ketone selected from the group consisting of acetone, cyclohexanone and cyclohexan-1,4-dione with difluoramine alone to give the hydroxy (difluoramino) derivative of the ketone, and then of reacting said derivative with difluoramine in the presence of an acid selected from the group consisting of fluorosulphonic acid and chlorosulphonic acid to give the bis(difluoramino) compounds.

3,624,156

CERTAIN TRIS(DIFLUORAMINO)SUBSTITUTED AMMONIUM PERCHLORATES

Ronald A. Mitsch, St. Paul; Joseph La Mar Zollinger, Woodbury Township, Washington County; Douglas H. Dybvig, St. Paul, and Charles D. Wright, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of application Ser. No. 286,881, May 29, 1963, now Patent No. 3,624,156, dated Nov. 30, 1971. This application Mar. 29, 1966, Ser. No. 540,143
Int. Cl. C07c *87/22*
U.S. Cl. 260—584 C 19 Claims

A compound of the formula

$$[[(NF_2)_nCF_mO(CH_2)_p]_rCH_s]NH_y{}^+ClO_4{}^-$$

wherein n is a number from 1 to 3, m is 3-n, p is from 1 to 11, r is from 1 to 3, s is 3-r, x is 1 to 3 and y is 4-x, provided that at least one of r and x is 1.

3,624,157

PROCESS FOR PREPARING ORTHO-CHLOROBENZALDEHYDE

Raymond W. Ingwalson, and Nathan Dale Ledford, both of Chattanooga, Tenn., assignors to Velsicol Chemical Corporation, Chattanooga, Tenn.

Filed Dec. 17, 1969, Ser. No. 886,022
Int. Cl. C07c *47/54*
U.S. Cl. 260—599 9 Claims

This invention discloses a process for preparing orthochlorobenzaldehyde which comprises chlorinating the side chains of a mixture of ortho- and para-chlorotoluene containing from about 50 to about 85 percent by weight of the orthoisomer in the liquid phase with chlorine gas until the ratio of orthochlorobenzal chloride to parachlorobenzal chloride in the reaction mixture is at least about 10 to 1 by weight, hydrolyzing the resulting mixture to the corresponding benzaldehyde and benzoic acids and thereafter recovering the orthochlorobenzaldehyde therefrom.

3,624,158

HYDROFORMYLATION PROCESS EMPLOYING DIORGANO-HALO PHOSPHINES AS LEGANDS WITH COBALT CARBONYL

John F. Deffner, Glenshaw; Edmond R. Tucci, Pittsburgh, and John V. Ward, Oakmont, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 23, 1966, Ser. No. 574,298
Int. Cl. C07c *45/08*
U.S. Cl. 260—604 HF 14 Claims

An Oxo process wherein an olefin is reacted with hydrogen and carbon monoxide in the presence of a cobalt carbonyl and a dialkyl halo phosphine or a diaryl halo phosphine, preferably in the presence of a trialkyl amine.

3,624,159

PRODUCTION OF ORGANIC HALIDES AND TERTIARY PHOSPHINE SULFIDES

Michael J. Dagani, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Apr. 9, 1969, Ser. No. 815,281
Int. Cl. C07f *9/50*, *19/02*
U.S. Cl. 260—606.5 P 8 Claims

Organic halides and tertiary phosphine sulfides are coproduced by heating a thiol (e.g., alkane monothiol, alkane dithiol) with a tertiary phosphine dihalide to a suitably elevated temperature.

3,624,160

TRIS(MERCAPTOALKYL) CYCLOHEXANES

Faber B. Jones, Bartlesville, Okla., and Jack E. Reece, Willernie, Minn., assignors to Phillips Petroleum Company

Continuation-in-part of application Ser. No. 675,054, Oct. 13, 1967, now Patent No. 3,505,166, dated Apr. 7, 1970. This application Dec. 18, 1969, Ser. No. 886,377
Int. Cl. C07c *149/00*; B32b *27/38*
U.S. Cl. 260—609 D 1 Claim

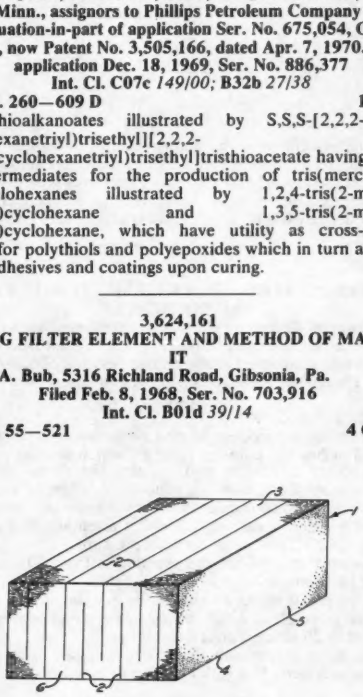
Tristhioalkanoates illustrated by S,S,S-[2,2,2-(1,2,4-cyclohexanetriyl)trisethyl][2,2,2-(1,3,5-cyclohexanetriyl)trisethyl]tristhioacetate having utility as intermediates for the production of tris(mercaptoalkyl)cyclohexanes illustrated by 1,2,4-tris(2-mercaptoethyl)cyclohexane and 1,3,5-tris(2-mercaptoethyl)cyclohexane, which have utility as cross-linking agents for polythiols and polyepoxides which in turn are useful as adhesives and coatings upon curing.

3,624,161

ZIGZAG FILTER ELEMENT AND METHOD OF MAKING IT

Robert A. Bub, 5316 Richland Road, Gibsonia, Pa.

Filed Feb. 8, 1968, Ser. No. 703,916
Int. Cl. B01d *39/14*
U.S. Cl. 55—521 4 Claims



A zigzag filter element is produced from innumerable fibers that had been laid upon one another to form a batt having upper and lower surfaces. The filter element has front and back faces and parallel slots cut nearly through it from those faces, with the slots at the front alternating with those at the back. The central longitudinal planes of the slots intersect opposed surfaces of the element corresponding to said upper and lower surfaces of the batt.

3,624,162

PROCESS FOR MAKING 4,4'-DIHYDROXY STILBENES

Rolf Sieber, Cologne Longerich, Germany, assignor to Wacker-Chemie G.m.b.H., Munich, Germany

Filed Aug. 15, 1967, Ser. No. 660,600
Claims priority, application Germany, Aug. 17, 1966, W 42235
Int. Cl. C07c 37/00
U.S. Cl. 260—619 B 2 Claims

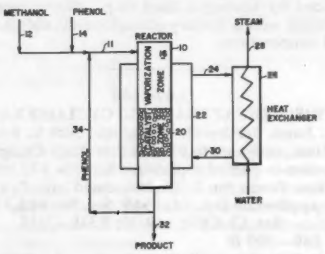
This invention relates to 4,4'-dihydroxy stilbenes, and it has for its object to provide a simple and efficient process for making such compounds.

3,624,163

PROCESS FOR THE PREPARATION OF META-, PARA-CRESOL MIXTURES WITH HIGH META TO PARA RATIO

Elsio Del Bel, Bethel Park, and Martin B. Neuworth, Pittsburgh, both of Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Filed Feb. 12, 1968, Ser. No. 704,839
Int. Cl. C07c 39/06
U.S. Cl. 260—621 R 9 Claims



An improvement in the methylation of phenol or o-cresol resulting from the use of an activated alumina catalyst having strong acid sites, whereby a meta-, para-cresol distillate fraction having a high meta to para ratio can be recovered from the product by fractional distillation only.

3,624,164

PREPARATION OF ALKALI METAL SALTS OF NITROPHENOLS

Constantinos Georgiou, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 186,346, Apr. 11, 1962. This application Aug. 4, 1966, Ser. No. 570,162
Int. Cl. C07c 79/24
U.S. Cl. 260—622 R 4 Claims

A continuous process for the preparation of alkali metal salts of ortho- and para-nitrophenol, which process comprises continuously contacting and reacting the ortho- and para-chloronitrobenzene with an aqueous solution of sodium or potassium hydroxide under the following reaction conditions:

a. The reaction is carried out within a temperature range of 180° to 250° C. and at autogenous pressure.

b. The time interval for the reaction is from 30 seconds to about 10 minutes.

c. At least 2.0 moles of sodium or potassium hydroxide is charged per mole of ortho- or para-chloronitrobenzene as a 5 percent to 20 percent aqueous solution.

d. The power input into the reaction system is at least 2.3 horsepower per 1,000 gallons of reaction volume.

3,624,165

PURIFICATION PROCESS

John S. Dehn, and Johnny L. Slate, both of Texas City, Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 25, 1969, Ser. No. 819,489
Int. Cl. C07c 29/24
U.S. Cl. 260—643 F 5 Claims

A process for removing iron carbonyls from an alkanol stream, said alkanol having one to 15 carbon atoms, comprising contacting said stream with a metal oxide and separating the alkanol from the metal oxide.

3,624,166

PROCESS FOR THE SOLVENT EXTRACTION OF HALOALKANES

Robert Fuhrmann, Morris Plains; John Pisanchyn, Morristown, and Fred William Koff, Clifton, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 1, 1968, Ser. No. 772,838
Int. Cl. C07c 17/38
U.S. Cl. 260—652 P 11 Claims

This invention relates to an improved method of separating haloalkanes from alkanes or other haloalkanes of lower halogen to carbon ratio by extraction with dialkyl sulfoxides, cyclic lactams or nitroparaffins. The haloalkanes of interest are fluoroalkanes, chloroalkanes, and bromoalkanes.

3,624,167

CONVERSION OF ACETYLENIC HYDROCARBON TO FLUOROALKENES AND FLUOROALKAPOLYENES

Lloyd E. Gardner, Bartlesville, Okla., assignor to Phillips Petroleum Company

Original application Mar. 12, 1965, Ser. No. 439,475, now Patent No. 3,432,411. Divided and this application Dec. 30, 1968, Ser. No. 788,000
Int. Cl. C07c 17/08
U.S. Cl. 260—653.4 5 Claims

A catalyst suitable for converting an acetylenic hydrocarbon to a fluoroalkene, a fluoroalkadiene, or a fluoroalkatriene by contacting said acetylenic hydrocarbon with HF, is formed by treating a finely divided alumina with a liquid solution of ammonium fluoride, ammonium bifluoride, or hydrogen fluoride, thereafter draining said solution from said alumina, repeating the treating and draining steps, and thereafter heating the impregnated catalyst to a temperature in the range of 300° to 1000° F. for a period of time in the range of 2 to 24 hours.

3,624,168

1,1-DIHALOALLENES

Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 21, 1969, Ser. No. 878,905
Int. Cl. C07c 21/00
U.S. Cl. 260—654 9 Claims

Novel 1,1-dihaloallene compounds corresponding to the formula

$$\begin{matrix} & & \mathrm{CH_2} \\ & & \| \\ \mathrm{X} & \mathrm{C} & \mathrm{C} \\ & \| & \\ & \mathrm{C} & \end{matrix}$$

and their preparation from 1,3-dihalopropynes by reaction with alkali metal iodides are disclosed.

The compounds are suitable for use as antimicrobials in controlling various bacteria and fungi.

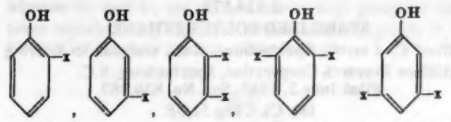
3,624,169

PROCESS FOR CHLORINATING OLEFINES

Otto Fruhwirth, Burghausen-Obb; Ludwig Schmidhammer, Burghausen-Obb, and Eduard Pichl, Burgkirchen-Obb, all of Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

Filed Dec. 15, 1969, Ser. No. 885,258
Claims priority, application Germany, Jan. 21, 1969, P 19 02 843.4
Int. Cl. C07c 17/02, 21/04
U.S. Cl. 260—654 H 7 Claims

Process for chlorinating olefines with two to four C atoms, including butadiene, which comprises reacting chlorine with the olefine in the liquid reaction product itself, at a pressure of 0.5 to 6 atm. absolute, and at a temperature of 0° to 80° C., in the presence of a catalyst consisting of one or more ortho- and/or meta-substituted phenols having the general formula



where x is an alkyl radical with one to six C atoms, or a halogen, or a hydroxyl group. The catalyst solution may be circulated during the process, while the consumed olefine and chlorine are replaced.

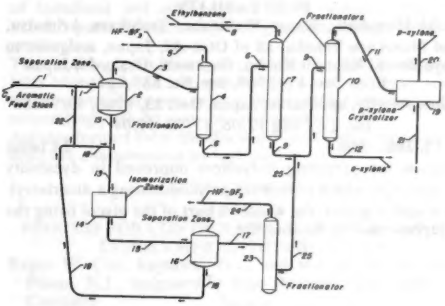
3,624,170
PROCESS FOR OXYCHLORINATION OF ETHYLENE
Satoshi Wakiyama, and Kanichi Uchida, both of Yamaguchi-ken, Japan, assignors to Toyo Soda Mfg. Co., Ltd., Yamaguchi-ken, Japan
Filed Apr. 5, 1967, Ser. No. 628,559
Claims priority, application Japan, Sept. 16, 1966, 41/61159
Int. Cl. B01j *11/78;* **C07c** *17/02*
U.S. Cl. 260—659 **5 Claims**

There is provided an improvement in the process for the catalytic gas phase oxychlorination of ethylene. The process comprises reacting ethylene, hydrogen chloride and a member of the group of air and oxygen in an iron-type reactor to produce, 1,2-dichloroethane. The improvement of the invention relates to conducting the reaction at a temperature of about 220° C. to about 300° C. and in the presence of a catalyst supported on an inert porous carrier and comprising copper, sodium and magnesium in an atomic ratio of Cu:Na:Mg of 1:0.2 to 0.7:0.3 to 1.5. The novel catalyst compositions are also provided.

3,624,171
PROCESS FOR THE PRODUCTION OF 1,8-DIBROMOOCTANE
Charles V. Goebel, Jr., Corte Madera, and Louis L. Ferstadig, El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Original application Apr. 7, 1964, Ser. No. 358,079, Pat. No. 3,329,704. Divided and this application May 16, 1967, Ser. No. 651,064
Int. Cl. C07c *17/08*
U.S. Cl. 260—663 **3 Claims**

1,8-dibromooctane is prepared from a cyclooctene vapor phase heart-cut thermal crackate in a process which includes sulfuric acid treating, and hydrobromination under free radical catalysis at temperatures in the range −10° to 40° C.

3,624,172
PROCESS FOR THE PRODUCTION OF PARA-XYLENE
George F. Adams, Tulsa, Okla., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Aug. 3, 1970, Ser. No. 60,450
Int. Cl. C07c *5/24*
U.S. Cl. 260—668 A **4 Claims**



Para-xylene is produced from a mixture of xylenes and ethylbenzene by first separating meta-xylene from the mixture, removing ethylbenzene from the residue by fractional distillation, and then recovering para-xylene and ortho-xylene from the fractionation bottoms. The separated meta-xylene is isomerized in an isomerization zone to produce a xylene mixture with the unconverted meta-xylene being separated in a separate separation zone and recycled to the isomerization zone and the produced ortho-xylene and para-xylene being recovered with the ethylbenzene fractionation bottoms.

3,624,173
GD ZEOLITE AND HYDROCARBON CONVERSION PROCESS WITH GD ZEOLITE CATALYST
Francis William Kirsch, Wayne; David S. Barmby, Media, and John D. Potts, Springfield, all of Pa., assignors to Sun Oil Company, Philadelphia, Pa.
Continuation-in-part of application Ser. No. 581,129, Aug. 25, 1966, now abandoned. This application Mar. 26, 1968, Ser. No. 715,998
Int. Cl. B01j *11/40;* **C07c** *3/54*
U.S. Cl. 260—671 **11 Claims**

A process for converting hydrocarbons comprises contacting a hydrocarbonaceous feed in a conversion zone at an elevated temperature with a substantially anhydrous Gd alumino-silicate zeolite and recovering an upgraded hydrocarbon conversion product. The process can be used to obtain a product having a significantly greater average molecular weight than that of the hydrocarbonaceous feed. the preferred zeolite is crystalline, capable of adsorbing benzene, and, in the hydrated condition, is chemically characterized by the empirical formula $M_x(AlO_2)_x(SiO_2)_y(H_2O)_z$, where x, y and z are integers, the ratio $x:y$ being usually from 1.0 to 0.2 and where at least 25 percent (and more preferably more than 40 percent) of the negative charge associated with the aluminum of the alumino-silicate framework is satisfied by a cation of Gd or a cation of an oxide or a hydroxide of Gd. The Gd alumino-silicate catalyst is especially useful for conversions involving the liquid phase catalytic contacting of C_5—C_9 olefin in admixture with C_4—C_8 isoparaffin to obtain liquid paraffin alkylate for gasoline blending. The catalyst is also useful for the polymerization (in liquid or vapor phase) of olefins, particularly to produce liquid polyolefins which can be converted, as by hydrogenation, to paraffins in the gasoline boiling range.

3,624,174
RECOVERY OF ANTHRACENE AND CARBAZOLE
Gerald Sugerman, Parsippany, N.J., assignor to Chem Systems, Inc., New York, N.Y.
Filed May 11, 1970, Ser. No. 36,407
Int. Cl. C07c *15/28*
U.S. Cl. 260—675 **9 Claims**

This invention is directed towards an improved process for obtaining anthracene and carbazole from mixtures thereof containing phenanthrene. More specifically, the invention teaches the removal of the anthracene and carbazole from such admixtures by means of azeotropic distillation and selective crystallization.

3,624,175
OLIGOMERIZATION OF BUTADIENE
Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company
Original application Jan. 15, 1968, Ser. No. 697,629, now Patent No. 3,541,176, dated Nov. 17, 1970, which is a division of application Ser. No. 541,516, Apr. 11, 1966, now Patent No. 3,393,245, dated July 16, 1968, and a continuation-in-part of 500,226, Oct. 21, 1965, now abandoned. Divided and this application June 25, 1970, Ser. No. 49,926
Int. Cl. C07c *11/02, 11/12*
U.S. Cl. 260—677 R **8 Claims**

Butadiene is oligomerized with a catalyst formed by mixing a conjugated diene-organolithium adduct with a cobalt compound.

3,624,176

CATALYTIC PROCESS FOR PRODUCING GAS MIXTURES HAVING HIGH ETHYLENE CONTENTS

Pierre Lhonore, Douai; Jacques Quibel, Maisons-Laffitte, and Michel Senes, Saint-Nazaire, all of France, assignors to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques

Filed June 23, 1969, Ser. No. 835,784
Claims priority, application France, June 25, 1968, 156456
Int. Cl. C07c *3/34*, *11/02*; C10q *13/18*
U.S. Cl. 260—683 R 9 Claims

Process for the catalytic steam reforming in a fluidized bed of light and heavy hydrocarbons, with the object of obtaining mixtures with a high ethylene and propylene content, in which the reforming in a fluidized bed is carried out under a pressure capable of reaching 50 bars absolute, in the presence of stable catalyst compositions without dehydrogenating metal or little dehydrogenating metal, composed of refractory oxides of limited porosity and with specific surfaces which are between 0.02 and 10 $m^2/g.$, with a grain size between 50μ and 5 mm., resistant to the temperatures of the fluidized bed which are between 650° and 900° C. and to the pressure, without regeneration of the said compositions.

3,624,177

OLIGOMERIZATION OF OLEFINS

Edwin Daniel Lowther, Ashford Common, England, assignor to BP Chemicals Limited, London, England

Filed May 15, 1970, Ser. No. 37,863
Claims priority, application Great Britain, June 10, 1969, 29,360/69
Int. Cl. C07c *3/20*; B01j *11/82*
U.S. Cl. 260—683.15E 9 Claims

A catalyst suitable for the oligomerization of olefins, comprising metallic potassium, rubidium or cesium dispersed on anhydrous lithium carbonate. A process for the oligomerization of olefins which comprises contacting an olefin or mixture of olefins with said catalyst.

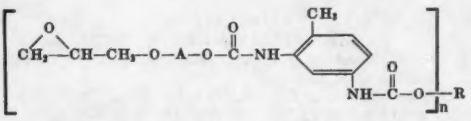
3,624,178

EPOXY TERMINATED POLYURETHANES

Friedrich Lohse, Allschell; Daniel Porret, Binningen; Willy Fatzer, Bottmingen, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Continuation-in-part of application Ser. No. 653,314, July 14, 1967, now abandoned. This application Feb. 3, 1970, Ser. No. 8,407
Int. Cl. C08g *45/00*, *45/12*, *22/00*
U.S. Cl. 260—830 TW 16 Claims

An epoxy resin mixture containing (1) the polyepoxide of the formula



where *n* is a whole number, at least 2, preferably 2 or 3, R stands for a n-valent aliphatic residue which may be interrupted by oxygen atoms and A represents the residue of a glycol or of a polyglycol whose terminal hydroxyl groups have been removed, and (2) the diglycidyl ether of a glycol or polyglycol.

3,624,179

STABILIZED POLYURETHANE

Clifford C. Carroll, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed June 3, 1969, Ser. No. 830,087
Int. Cl. C08g *51/58*
U.S. Cl. 260—830 P 11 Claims

A shaped structure of spandex-type elastomers stabilized against discoloration by treatment with a phosphonium compound having the formula:

$$[RCH(OH)]_4P^{\oplus}X^{\ominus}$$

wherein R is hydrogen or an alkyl radical and X is a halogen or a hydroxy radical. In addition to these phosphonium compounds, the structures also may be treated with a polymeric binder material which results in improved stabilization and durability.

3,624,180

HEAT-CURABLE COMPOSITIONS OF MATTER

Rolf Schmid, Florastrasse 7, Reinach, Basel-Land; Friedrich Lohse, Lilienstrasse 39, Allschwil; Willy Fisch, Hoelzlistrasse 42, Binningen, and Hans Batzer, Rainwig 7, Arlesheim, all of Switzerland

Filed July 29, 1969, Ser. No. 845,917
Claims priority, application Switzerland, Aug. 7, 1968, 11847/68
Int. Cl. C08g *45/14*
U.S. Cl. 260—835 17 Claims

Heat-curable epoxide resin mixtures from (1) a polyepoxide with at least one carbocyclic or heterocyclic ring (e.g. ARALDIT CY 175, triglycidylisocyanurate or casting resin F), (2) a polyester containing at least one carbocyclic or heterocyclic ring with terminal carboxyl groups; the ratio of the total chain members Z_g to the ring members Z_r must be 2 to 13, and the chain contains 2 to 10 recurring structural elements (e.g. polyesters from phthalic acid anhydride and ethyleneglycol 11:10 or from succinic acid and 1,1-bis-(hydroxymethyl)cyclohexane 5:4) in a quantity of 0.2–0.8 equivalent per 1 epoxide equivalent and (3) a polycarboxylic acid anhydride (phthalic acid anhydride, hexahydrophthalic acid anhydride) containing a carbocyclic ring in a quantity of 0.8 to 0.2 equivalent per 1 epoxide equivalent. Cured shaped articles have unexpectedly high tensile strength (to over 900 $kg./cm^2$) and show after gelling very slight shrinkage.

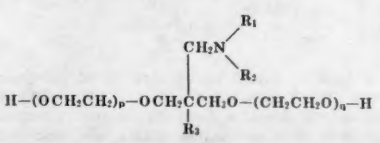
3,624,181

PROCESS FOR PREPARING POLYESTERS IMPROVED IN DYEABILITY

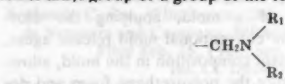
Hideaki Munakata; Kazoo Watanabe; Yoshikazu Arimatsu, and Masakazu Tanaka, all of Otsu-shi, Japan, assignors to Toyo Boseki Kabushi Kaisha, Osaka-shi, Osaka-fu, Japan

Filed Dec. 17, 1969, Ser. No. 885,964
Claims priority, application Japan, Dec. 23, 1968, 43/94680
Int. Cl. C08g *17/06*, *17/08*, *39/04*
U.S. Cl. 260—860 2 Claims

Process for preparing polyesters improved in dyeability with acid dyes which comprises polycondensing a dicarboxylic acid with a glycol, the whole or part of the glycol being the one represented by the formula:



wherein R_1 and R_2 are each a lower alkyl group or, when taken together, they represent a lower alkylene group, R_3 is a lower alkyl group or a group of the formula:



in which R_1 and R_2 are each as defined above and p and q are each zero or a positive integer not more than 10, or blending the resultant polymer into linear fiber-forming polyesters.

3,624,182

ABS POLYMER BLENDS FOR HIGH-SHEAR PROCESSING

Hideo Kubota, Roseville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 13, 1970, Ser. No. 54,629
Int. Cl. C08f *41/12, 29/56*
U.S. Cl. 260—876 R **6 Claims**

When a small amount of a relatively low molecular weight terpolymer of styrene, acrylonitrile and a saturated higher fatty alcohol ester of acrylic acid or methacrylic acid is incorporated into a conventional high impact grade ABS thermoplastic resin, the resin blend may be more readily subjected to high-shear forming processes to produce high-quality parts. The presence of the terpolymer in an ABS resin melt improves melt flow properties in extrusion or injection molding operations by markedly reducing melt viscosity and increasing melt stability.

3,624,183

GRAFT COPOLYMER PRODUCTS AND METHOD OF MAKING SAME

Benton R. Leach, and Allan G. Murray, both of Naugatuck, Conn., assignors to United States Rubber Company, New York, N.Y.

Filed Jan. 27, 1966, Ser. No. 523,286
Int. Cl. C08f *19/08*
U.S. Cl. 260—876 **7 Claims**

A graft copolymer is prepared by polymerizing monomeric styrene and acrylonitrile in a latex of a synthetic rubbery copolymer of about 90 parts of butadiene and 10 parts of styrene having at least 80 percent gel content. The average particle diameter of the latex is 2,000 to 5,000 angstrom units. From 40 to 55 parts of the monomers are used with correspondingly from 60 to 45 parts of the synthetic rubber. The polymerization is carried at 120°–175° F. to a conversion of at least 85 percent of the styrene and acrylonitrile to copolymer. The anionic surface-active emulsifier level during the grafting is maintained at not over 5 parts per 100 parts of rubber and styrene-acrylonitrile copolymer that has been polymerized in the latex until at least 75 percent of the styrene and acrylonitrile monomer mixture to be polymerized in admixture with the synthetic rubber has been converted to polymer.

Preferably the rubber latex is prepared by at 100°–170° F. in the presence of 0.1–0.3 part of alkalimetal soap per 100 parts of butadiene and sytrene until 20–50 percent conversion, 1.5–2.3 parts of such soap being added during further conversion.

The resulting graft copolymer can be blended, preferably by latex blending, with a separately prepared copolymer resin of 60–80 parts of styrene and/or alpha-methyl styrene and correspondingly 40–20 parts of acrylonitrile.

Articles formed from the disclosed graft copolymer compositions are characterized by high surface gloss.

3,624,184

PROCESS FOR CONTROLLING MONOMER RATIO IN COPOLYMERIZATION REACTION

Roger W. Cox, Baytown, Tex., and Murray Nadler, Morris Plains, N.J., assignors to Esso Research and Engineering Company

Filed July 10, 1968, Ser. No. 743,724
Int. Cl. C08f *15/04*
U.S. Cl. 260—878 **10 Claims**

The present invention provides a process for controlling the ratio of two monomers in the second reaction zone of a two-zone polymerization process. The first monomer is polymerized in the first reaction zone and a varying amount of unreacted first monomer is discharged in a first zone effluent from said first reaction zone, caused by uncontrollable variation in the percentage conversion in the first reaction zone. The effluent from the first reaction zone is introduced into a flash zone which is maintained at a substantially constant but controllably variable pressure and temperature, the pressure being less than the pressure in the first reaction zone, so that a stabilized effluent from the flash zone can be obtained which is saturated with dissolved first monomer. If the temperature and pressure of the flash zone are such that the maximum solubility of the first monomer in the liquid phase exceeds the amount of monomer passed from the first reaction zone, additional amounts of the first monomer can be introduced into the flash zone in order to obtain such saturation. The stabilized effluent is then charged into a second reaction zone wherein the second monomer is coreacted with the first monomer.

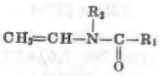
3,624,185

PROCESS FOR THE MANUFACTURE OF PLASTICS MATERIALS HAVING A GOOD IMPACT STRENGTH

Michael Lederer, Frankfurt am Main; Werner Ehmann, Frankfurt am Main, and Fritz Marktscheffel, Glashutten, Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Feb. 19, 1969, Ser. No. 800,749
Claims priority, application Germany, Feb. 29, 1968, P 17 20 793.1
Int. Cl. C08f *15/04, 7/04, 1/11*
U.S. Cl. 260—880 R **7 Claims**

A process for the suspension polymerization of a prepolymer derived from a mixture of from 70 percent to 98 percent of a vinyl aromatic substance, 2 percent to 30 percent of one or more elastomers, which has been mass-polymerized to a conversion of 10 to 60 percent, in an aqueous phase in the presence of a dispersing agent, which comprises using, as a dispersing agent, a copolymer of an open-chain N-vinylamide of the formula



in combination with a salt of polyvinyl sulfonic acid.

3,624,186

LUBRICANT FOR ABS AND SAN POLYMERS

Hideo Kubota, Roseville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 13, 1970, Ser. No. 54,560
Int. Cl. C08f *29/56*
U.S. Cl. 260—893 **5 Claims**

The extrusion or injection molding of ABS and SAN resin melts is aided by incorporating into the melt up to about 3 percent by weight of a stearate or palmitate ester of hydroxy terminated polybutadiene or a hydroxy terminated butadiene-acrylonitrile copolymer. The polymer ester functions as an excellent lubricant for shear processing in melts of ABS and SAN.

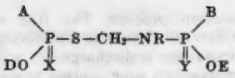
3,624,187

DIPHOSPHORYL DERIVATIVES OF THIOETHANOLAMINE

Jean Marie Cheymol, Paris; Pierre Eugene Chabrier de Lassauniere, Paris; Thuong Than Nguyen, Olivet, Loiret, and Philippe Robert Sauignac, Paris, all of France, assignors to Centre National de La Recherche Scientifique, Paris, France

Filed Nov. 6, 1967, Ser. No. 681,005
Claims priority, application France, Nov. 7, 1966, 83,766
Int. Cl. A01n *9/36;* **C07f** *9/08, 9/24*
U.S. Cl. 260—926 **12 Claims**

Diphosphoryl derivatives of thioethanolamine of the formula:



wherein A and B each represent an alkyl, alkoxy, haloalkoxy, alkoxyalkoxy, alkylthio, alkenyloxy, alkenylthio, aryl, aryloxy, furlalkoxy, amino or substituted amino group,
D and E each represent an alkyl or aryl group,
R is hydrogen, methyl or ethyl; and
X and Y each represent oxygen or sulfur, which are useful as anticholinesterase compounds and as agricultural acaricides.

3,624,188

HYPOHALOGENATION OF TETRAMETHYL AND TETRAETHYL METHYLENEDIPHOSPHONATES AND TRIHYDROCARBYL PHOSPHONOACETATES

John Downing Curry, Oxford, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 624,226, Mar. 20, 1967, now abandoned , Continuation-in-part of application Ser. No. 717,999, Apr. 1, 1968, now abandoned. This application Oct. 25, 1968, Ser. No. 770,805

Int. Cl. C07f *9/40*

U.S. Cl. 260—986 **10 Claims**

The process of reacting either (1) a tetraalkyl (methyl, ethyl, halomethyl or haloethyl) methylenediphosphonate or (2) a trihydrocarbyl (C_2-C_4) phosphonoacetate with a hypohalite in an aqueous electrolyte solution (preferably in the presence of an inert, water-immiscible, organic solvent) to produce the corresponding mono- and di-halogenated methylenediphosphonate and phosphonoacetate esters. These esters have utility as intermediates in the synthesis of detergent builders and as extreme pressure additives for lubricant compositions.

ERRATUM

For Class 264—40 see:
Patent No. 3,624,025

3,624,189

PROCESS OF HEATING ACRYLONITRILE-BUTADIENE-STYRENE POLYMERS WITH ELECTROMAGNETIC FIELD ENERGY

Conrad Goldman, 298, Hazelwood Terrace, Rochester, N.Y.

Filed Jan. 24, 1969, Ser. No. 793,751

Claims priority, application Great Britain, Jan. 31, 1968, 4,989/68

Int. Cl. B29h *5/26*; **C08d** *9/08*; **C08f** *29/56*

U.S. Cl. 264—25 **1 Claim**

Methods for increasing the dissipation factor of acrylonitrile-butadiene-styrene polymers by the introduction of polar domains, thus improving the response to dielectric heating.

Also included are ABS polymers formed by the methods of the invention.

3,624,190

METHOD FOR RELEASING POLYURETHANE FOAM FROM A MOLD

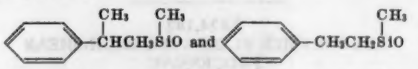
Joseph Cekada, Jr., and Edwin E. Reinink, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed June 16, 1967, Ser. No. 646,474

Int. Cl. B29d *27/04*; **C08g** *22/04*, *22/46*, *31/62*

U.S. Cl. 264—41 **10 Claims**

The deposition of a diorganopolysiloxane in liquid form on the surface of a mold is used in making polyurethane foam articles. The diorganopolysiloxane is a release agent for polyurethane foam when applied on a mold surface which has been treated with a conventional release agent. The steps of the method include depositing a conventional mold release agent on the surface of a mold, applying the diorganopolysiloxane over the conventional mold release agent, placing a polyurethane foam composition in the mold, allowing the foam to rise, curing the polyurethane foam and demolding the polyurethane foam product. the diorganopolysiloxanes have siloxane units of $R(CH_3)SiO$, at least 50 mol percent,



up to 40 mol percent, and $R'(CH_3)$ SiO, up to 10 mol percent, wherein R is an alkyl radical of three to 30 carbon atoms and R' is methyl, ethyl, phenyl, benzyl and $R''O(C\ H_2\ O)\ (CH_2)_3$—and the diorganopolysiloxane can be end blocked by hydroxyl groups or triorganosiloxy groups.

3,624,191

FOOTWEAR

Donald Weight, Chalfont Saint Giles, England, assignor to Monsanto Chemicals Limited, London, England

Filed Jan. 23, 1969, Ser. No. 793,559

Claims priority, application Great Britain, Feb. 1, 1968, 5232/68

Int. Cl. B29d *27/00*

U.S. Cl. 264—45 **3 Claims**

Footwear, such as a boot or shoe, having an insole comprising an extruded foamed resin sheet wherein the resin is an ethylene-vinyl acetate copolymer or a blend thereof with polyethylene and has a polymerized vinyl acetate content of 2–17 percent by weight. The insole has a substantially uniform thickness, a substantially closed cell structure, and a density of 17–40 pounds per cubic foot. Preferably, the insole is treated with an electric discharge prior to being bonded to the other components of the article of footwear. The insole can be bonded to these other components by any suitable means, preferably by the use of an adhesive.

3,624,192

PRODUCTION OF FOAMED RESINS

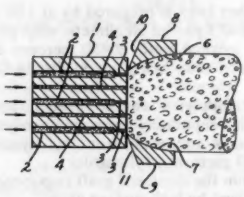
John Gerald McCoy, Newport, and William Rees Foster, Cwmbran, both of England, assignors to Mensanto Chemicals Limited, London, England

Filed May 6, 1968, Ser. No. 726,857

Claims priority, application Great Britain, May 19, 1967, 23,303/67

Int. Cl. B29d *27/00*

U.S. Cl. 264—51 **9 Claims**



Die assemblies and processes for extruding a foamable thermoplastic polyvinylaromatic resin through a rectangular die orifice into a zone of lower pressure such that foaming of the resin occurs as it moves through the zone, said zone being defined by a pair of opposing concave surfaces maintained at a temperature lower than the extrusion temperature and curved so that they substantially conform to the corresponding surfaces of the freely expanding resin without exerting a substantial compressive force thereon. The die assemblies and processes are particularly useful for the production of low-density foamed boards having smooth surfaces.

3,624,193

POLYAMIDE FILAMENTMAKING PROCESS INCLUDING SOLID-STATE POLYMERIZATION

Benjamin C. Sze, Wilmington, Del., assignor to E. I du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 25, 1969, Ser. No. 802,239
Int. Cl. D01d 5/10
U.S. Cl. 264—101 1 Claim

A process for preparing melt spun fibers from a polymer derived from dodecanedioic acid and bis(4-aminocyclohexyl)methane which comprises reacting said precursors in the melt to form a polyamide of from 12,000 to 15,000 molecular weight, extruding the molten polyamide as a ribbon having at least one dimension not exceeding 0.050 inch into an essentially oxygen-free atmosphere and then submerging the molten ribbon in an aqueous quench bath for at least 1 second, withdrawing the ribbon from the bath and further polymerizing in the solid phase until a polymer of molecular weight in excess of 25,000 is attained, melt spinning the polymer into filaments and drawing the filaments at least about 2.5X draw ratio to produce a high tenacity yarn essentially free from nubs and broken filaments.

3,624,194

PRODUCTION OF SPLIT FIBERS

Ernst Pirot, Wuppertal, Germany, assignor to J. P. Bemberg Aktiengesellschaft, Wuppertal, Germany

Filed Dec. 26, 1968, Ser. No. 787,211
Claims priority, application Germany, Jan. 3, 1968, P 17 10 608.0
Int. Cl. B29c 23/00, 24/00
U.S. Cl. 264—145 2 Claims

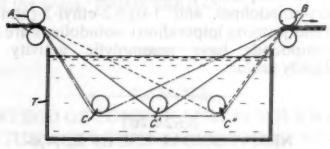
Process of producing split fibers in which a fiber-forming polymer film is extruded and then cut, stretched and split in the usual manner to form split fibers, the polymer consisting essentially of a mixture of polypropylene having more than 5 percent atactic content with a low-pressure polyethylene. The resulting split fibers are generally useful as continuous threads, yarns and the like or as staple fibers.

3,624,195

PROCESS FOR THE PREPARATION OF ACRYLIC MANMADE FIBER

Chozo Nakayama, Fuji-shi; Toshio Ohfuka, Fuji-shi; Hiroshi Yokoyama, Fuji-shi; Hideo Sato, Fuji-shi; Kouichi Ashikaga, Yoshihara-shi; Takashi Sakakiyam, Yoshihara-shi, and Kouji Kitashima, Fuji-shi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of application Ser. No. 540,388, Apr. 5, 1966, now abandoned. This application Oct. 13, 1969, Ser. No. 866,178
Int. Cl. D01d 5/22; D02g 1/00
U.S. Cl. 264—168 10 Claims



A composite acrylonitrile filament is passed through a hot water bath substantially without relaxation and with a tension of less than 0.005 grams per denier and at a substantially unchanged speed relative to the spinning speed.

3,624,196

STABILIZATION OF ACRYLONITRILE FIBERS TO HOT-WET CREEP

Charles Alexander Ball, Mount Vernon, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 8, 1971, Ser. No. 1,548
Int. Cl. B29c 25/00; D01f 7/00
U.S. Cl. 264—234 7 Claims

A process is provided for improving the dimensional stability under hot-wet conditions of fibers prepared from acrylonitrile polymer containing at least 95 percent acrylonitrile wherein said fibers after orienting and drying are heated with wet steam under pressure to a temperature below the temperature where they shrink until the tendency to creep under hot-wet conditions is reduced.

3,624,197

WATER-SOLUBLE TISSUE INFILTRATING AND EMBEDDING COMPOSITIONS

Philip Schain, 126 Silver Lake Road, Staten Island, N.Y.

Continuation of application Ser. No. 555,969, June 8, 1966, now abandoned. This application Sept. 4, 1969, Ser. No. 871,754
Int. Cl. G01n 1/00, 1/30
U.S. Cl. 424—3 2 Claims

Water-soluble tissue infiltrating and embedding compositions facilitating rapid preparation of tissue sections biopsic study comprising 50 to 60 percent of polyethylene glycol having a molecular weight of about 3700 and somewhat less than 50 percent of a mixture of nonionic surface active agents having varying consistency ranging from solid to semisolid and liquid consistencies together with small amounts of water soluble and water-insoluble waxes, whereby the hardness of the polyethylene glycol is reduced and hygroscopicity maintains substantially constant during seasonal variations of ambient temperature and humidity.

3,624,198

RODENTICIDE BAIT

Howard L. Arbaugh, Portsmouth, Ohio, assignor to The AR Chem Corporation, Portsmouth, Ohio

Filed Oct. 3, 1968, Ser. No. 764,941
Int. Cl. A01n 11/00
U.S. Cl. 424—17 2 Claims

A rodent bait suitable for use on crops comprising a unitary body of intimately mixed particles of metal phosphide such as zinc phosphide, citric acid and a hard wax component. The hard wax component forms a protective coating around the particles of metal phosphide and citric acid. The citric acid has been found to completely decompose the metal phosphide toxicant upon absorption of moisture by the unitary body. Thus, the rodent bait of the invention has the advantage of preventing decomposition of the metal phosphide toxicant until a preset time when it completely decomposes the metal phosphide leaving no toxic residues.

3,624,199

DENTAL CREAM

James Norfleet, 506 Lee Pl., Plainfield, N.J., and Francis D. Roberts, 22 Crest Drive, W. Millington, N.J.

Filed Apr. 21, 1969, Ser. No. 818,047
Int. Cl. A61k 7/16
U.S. Cl. 424—57 9 Claims

Dental cream containing hydrated alumina, calcium carbonate or insoluble alkali metal metaphosphate as polishing agent, benzyl alcohol as desensitizing agent and zinc oxide. The cream does not swell or corrode unlined aluminum tubes when incorporated therein.

3,624,200

CONTROLLING PERSPIRATION ON HUMAN SKIN WITH SCOPOLAMINE ESTERS

Robert B. Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of application Ser. No. 39,781, June 30, 1960, now abandoned , and a continuation-in-part of 62,563, Oct. 14, 1960, now abandoned. This application July 21, 1964, Ser. No. 384,246

Int. Cl. A61k *7/00*

U.S. Cl. 424—65 7 Claims

This invention relates to compositions for controlling perspiration odors on human skin by scopolamine esters or physiologically acceptable acid addition salts thereof dispersed in topical carriers.

3,624,201

COMPOSITIONS CONTAINING CALCIUM AND MAGNESIUM SALTS OF CITRIC, PHOSPHORIC AND LACTIC ACID AND METHOD OF PROMOTING HEALING OF WOUNDS THEREWITH

Leslie L. Balassa, Blooming Grove, N.Y., assignor to Lescarden Ltd., Goshen, N.Y.

Filed Feb. 12, 1968, Ser. No. 704,540

Int. Cl. A61k *17/00*

U.S. Cl. 424—95 4 Claims

Wound-healing compositions comprising calcium and magnesium slats of citric, phosphoric and lactic acid, and mixtures of the foregoing with chitin are described as well as methods of promoting healing of wounds, and the process of producing eggshells reacted with citric, phosphoric or lactic acid.

3,624,202

PROCESS FOR STILLING PAIN

Roland Jaques, Strengigartenweg 28, Allschwil, and Bernhard Noelpp, Flughafenstrasse 31, Basel, both of Switzerland

Filed Jan. 6, 1970, Ser. No. 1,020

Claims priority, application Switzerland, Jan. 22, 1969, 916/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—229 10 Claims

The invention concerns a process for stilling pain which consists in administering to a patient a pharmaceutical composition containing 1-[5-(dimethylsulfamoyl)-anthraniloyl]-4-methyl-piperazine or a salt thereof.

3,624,203

PHARMACEUTICAL CONTRACEPTIVE PREPARATION

Gerhard Anthony Overbeek, Nijmegen, Netherlands, assignor to Organon Inc., West Orange, N.J.

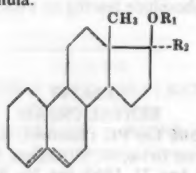
Filed Jan. 12, 1970, Ser. No. 2,418

Claims priority, application Netherlands, Feb. 26, 1969, 6903028

Int. Cl. A61k *27/00*

U.S. Cl. 424—238 5 Claims

The invention relates to the manufacture of novel pharmaceutical preparations and to oral dosage unit forms comprising as sole contraceptive material a gestagenic substance of the general formula:



in which

R_1=H or an acyl group with one to four carbon atoms or an alkyl group with

one to two carbon atoms, and

R_2 = an alkyn group with two to four carbon atoms, which may contain halogen

and in which there is one ethylenic bond starting from carbon atom five to carbon atom four or six,

preferably in a quantity of from 0.1 to 0.4 mg. per dosage unit form. The invention comprises also the treatment for the prevention of conception consisting in administrating to females continuously with regular intervals, preferably daily, the dosage unit forms.

3,624,204

PROTECTIVE AGENT AGAINST MOSQUITOES, SAND-FLIES, BLACK-FLIES, GNATS, HORSE-FLIES, FLEAS AND TICKS

Mikhail Konstantinovich Stepanov, Kirovsky prospekt, 68, kv. 65; Vladimir Tevosovich Osipyan, ulitsa Pesochnaya, 24, kv. 2; Viktor Borisovich Kazhdan, ulitsa Matrosa Zheleznyaka, 13 kv. 45; Leonid Kuymich Masly, prospekt Kosmonavtov, 13, kv. 98; Boris Stefanovich Grabovsky, Lesnoi prospekt, 4, kv. 7, and Irina Dmitrievna Dunaeva, ulitsa Mokhovaya, 47, kv. 20, all of Leningrad, U.S.S.R.

Continuation-in-part of application Ser. No. 625,632, Mar. 27, 1967, now abandoned. This application Apr. 24, 1969, Ser. No. 819,094

Int. Cl. A01n *9/00*

U.S. Cl. 424—244 5 Claims

A repellent agent for protecting people and animals from mosquitoes, sand-flies, black-flies, gnats, horse-flies, fleas and ticks, characterized by the inclusion of hexamethylenecarbamide in an amount between 20 and 90 percent.

3,624,205

TREATMENT OF HYPERURICEMIA IN HUMANS

George H. Hitchings, Yonkers, and Elvira A. Falco, New Rochelle, both of N.Y., assignors to Burroughs Wellcome & Co. (U.S.A.) Inc., Tuckahoe, N.Y.

Continuation-in-part of application Ser. No. 574,576, Mar. 29, 1956, now abandoned , Continuation-in-part of application Ser. No. 22,394, Apr. 15, 1960, now abandoned , Continuation-in-part of application Ser. No. 221,357, Sept. 4, 1962, now abandoned , Continuation-in-part of application Ser. No. 524,873, Feb. 3, 1966, now abandoned. This application Apr. 25, 1967, Ser. No. 633,364

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 5 Claims

The method of treatment and prophylaxis for hyperuricemia, which comprises administering to a human patient a therapeutically effective amount of a compound selected from the class consisting of 4-hydroxy-1-H-pyrazolo(3,4-d) pyrimidine and 4,6-dihydroxy-1-H-pyrazolo(3,4-d)pyrimidine.

3,624,206

3-SUBSTITUTED AND 2,3-SUBSTITUTED-1-OXO ISOINDOLINES AND THERAPEUTIC USE THEREOF

Pier Nicola Giraldi, Milan, and Vittorio Mariotti, Pesaro, both of Italy, assignors to Carlo Erba S.p.A., Milan, Italy

Continuation of application Ser. No. 769,441, Oct. 21, 1968, now abandoned , Continuation of application Ser. No. 669,380, Sept. 21, 1967, now abandoned. This application Feb. 3, 1969, Ser. No. 812,512

Claims priority, application Italy, Sept. 23, 1966, 22,771/66; Dec. 31, 1966, 31,818A/66

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 6 Claims

1-Oxo-3-(aminophenyl-p-ethoxy(and propoxy) piperidino)-isoindolines and 1-oxo-2-ethyl-3-(aminophenyl-p-ethoxy(and propoxy)piperidino)-isoindolines are disclosed. These compounds have spasmolytic activity and are therapeutically useful.

3,624,207

NEMATOCIDAL USE OF 2,3,4,6-TETRACHLOROPHENYL N-METHYLCARBAMATE

George A. Buntin, Faulkland, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Original application Sept. 30, 1963, Ser. No. 312,305, now abandoned. Divided and this application July 8, 1968, Ser. No. 743,046

Int. Cl. A01n *9/20*

U.S. Cl. 424—300 1 Claim

Disclosed is the use of 2,3,4,6-tetrachlorophenyl N-methylcarbamate as a nematocide.

3,624,208

FLOATING BATH OIL COMPOSITION

Irving R. Schmolka, Grosse Ile, Mich., assignor to Wyandotte Chemicals Corporation, Wyandotte, Mich.

Filed Jan. 20, 1967, Ser. No. 610,477
Int. Cl. A61k 7/00
U.S. Cl. 424—365 8 Claims

A floating bath oil composition is prepared from an emollient oil, a surfactant compound insoluble in the emollient oil and an ester solvent for the surfactant compound. The composition forms a continuous, stable film on the bath water surface and has rinsibility properties.

3,624,209

COMPOSITION FOR TREATMENT OF GASTRO-INTESTINAL DISORDERS

Edmund S. Granatek, and Alphonse P. Granatek, both of Baldwinsville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Dec. 28, 1966, Ser. No. 605,231
Int. Cl. A61k 27/00
U.S. Cl. 424—79 7 Claims

A pharmaceutical composition useful for the treatment of gastro-intestinal disorders comprising a diethylaminoethyl cross-linked dextran anion exchanger and a pharmaceutical carrier or another therapeutic agent and a method of treating gastro-intestinal disorders in mammals by the oral administration of such a composition.

3,624,210

ANTIFERTILITY AGENT

Richard P. Blye, Flemington; George O. Allen, Jr., Somerville, and Roger E. Homm, Neshanic, all of N.J., assignors to Ortho Pharmaceutical Corporation

Filed July 27, 1966, Ser. No. 568,146
Int. Cl. A61k 27/00
U.S. Cl. 424—317 3 Claims

2-Methyl-3-ethyl-4-(p-methoxyphenul)-3-cyclohexenecarboxylic acid, and 2-methyl-3-ethyl-4-(p-methoxyphenyl)-4-cyclohexenecarboxylic acid when administered orally postcoitally act as antilittering and antizygotic agents.

3,624,211

FUNGICIDAL AND BACTERICIDAL METHOD

Marcel Georges Meiffren, Meudon, France, assignor to Etablissement Public: Office de la Recherche Scientifique et Technique Outre-Mer, Paris, France

Filed Mar. 3, 1967, Ser. No. 620,274
Claims priority, application France, Mar. 3, 1966, 51943
Int. Cl. A01n 9/08; A61k 27/14
U.S. Cl. 424—195 3 Claims

Process for controlling bacteria and fungi using a solvent extract of the plant "Prunus lusitanica."

3,624,212

METHOD OF CONTROLLING FUNGUS WITH SUBSTITUTED BENZIMIDAZOLES AND SUBSTITUTED SULPHENYLISATINS

Claude Hennart, St. Denis, France, assignor to Dynachim S.A.R.L., Paris, France

Filed Dec. 5, 1966, Ser. No. 598,961
Claims priority, application France, Dec. 6, 1965, 40992
Int. Cl. A01n 9/22
U.S. Cl. 424—273 4 Claims

Substituted sulphenylbenzimidazoles and substituted sulphenylisatins are useful in controlling fungi.

3,624,213

METHOD OF STERILIZING AQUEOUS PHARMACEUTICAL SOLUTIONS EMPLOYING PROPYLENE OXIDE AND ENTRAINED AIR

Max A. Cherkas, Philadelphia, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 30, 1963, Ser. No. 319,988
Int. Cl. A61i 1/00; A61k 27/00
U.S. Cl. 424—177 3 Claims

Aqueous pharmaceutical preparations which are to be bottled are first sterilized by adding propylene oxide to the liquid and blowing air through it to convert it to propylene glycol which destroys microorganisms.

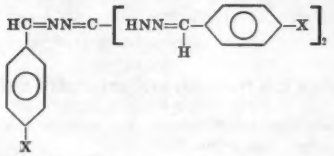
3,624,214

GUANIDENE DERIVATIVES FOR COCCIDIOSIS

Graham T. Stevenson, Midland, Mich., assignor to The Dow-Chemical Company, Midland, Mich.

Filed Mar. 25, 1970, Ser. No. 22,698
Int. Cl. A61k 27/00
U.S. Cl. 424—326 11 Claims

Animals are treated by oral administration of a 1,2,3-tris[(p-halobenzylidene)amino]guanidine or its hydrochloride salt to allow maximum normal growth of the animals by the control of protozoan organisms and mitigate against the attack of gastrointestinal parasites. The guanidine compound is of the formula:



wherein X is chlorine or bromine.

3,624,215

8-SUBSTITUTED THEOPHYLLINES AS ANTI-ANXIETY AGENTS

Herman Hal Stein, Skokie, and Elizabeth Goodsell, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed June 25, 1970, Ser. No. 49,921
Int. Cl. A61k 27/00
U.S. Cl. 424—253 4 Claims

A method of alleviating anxiety in mammals exhibiting such symptoms by administering from 1 to 50 mg./kg. daily of an 8-substituted theophylline.

3,624,216

8-SUBSTITUTED THEOPHYLLINES AS ANTI-INFLAMMATORY AGENTS

Herman Hal Stein, Skokie, and Elizabeth Goodsell, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed June 25, 1970, Ser. No. 49,919
Int. Cl. A61k 27/00
U.S. Cl. 424—253 3 Claims

A method of relieving inflammation and its concomittant swelling, tenderness and pain by administering therapeutically effective amounts of an 8-substituted theophylline to a patient in need of such treatment.

3,624,217

2-(SUBSTITUTED)-5,6-DIHYDRO-4H-1,3-THIAZINES FOR THE CONTROL OF RICE BLAST

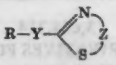
Richard C. Koch, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 788,642, Jan. 2, 1969, now abandoned. This application May 28, 1970, Ser. No. 41,532

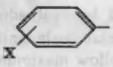
Int. Cl. A61k *27/00*

U.S. Cl. 424—246 10 Claims

The control of rice blast disease on rice plants by contacting the plants with a fungicidally effective amount of a composition comprising, as active ingredient, a compound having the formula



and the nonphytotoxic acid addition salts thereof, and a carrier therefor, wherein R is 2-thienyl, 1-naphthyl, 2-naphthyl, 3,4-methylenedioxyphenyl or



wherein X is hydrogen, chloro, bromo, fluoro, nitro, methyl, or ethyl, with the proviso that when Y is $-(CH_2)_n-$, X is other than hydrogen;

Y is —CH CH—, $-C(CH_3)$ CH—, —CH $C(CH_3)$—, —C(OH) CH—, or $-(CH_2)_n-$

wherein *n* is an integer of from 2 to 4; and

Z is ethylene or trimethylene.

3,624,218

PROCESS FOR SUPPRESSING FOOT-AND-MOUTH DISEASE VIRUS

William Regelson, Richmond, Va., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of application Ser. No. 716,257, Mar. 6, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 577,675, Sept. 7, 1966, now abandoned. This application July 10, 1970, Ser. No. 54,021

Int. Cl. A61k *27/00*

U.S. Cl. 424—78 2 Claims

Certain water-soluble copolymers prepared from divinyl ether and maleic anhydride have been found to suppress foot-and-mouth disease virus growth in cloven-footed animals.

3,624,219

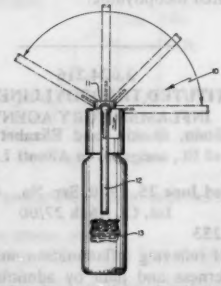
PLAQUE-DISCLOSING COMPOSITION AND PACKAGE SYSTEM

Max J. Perlitsh, 20 Everett Ave., Winchester, Mass.

Filed July 6, 1970, Ser. No. 53,519

Int. Cl. G01n *31/00;* A01n *17/02;* A61k *9/00*

U.S. Cl. 424—7 6 Claims



A plaque-disclosing formulation suitable for use in aerosol form without causing undue "cold-sensitivity" -related pain to a patient. The formulation comprises a specially selected dye such as Erythrosine B, and an active solvent like ethanol to aid penetration of the dye into the plaque deposit. It is incorporated into an aerosol charge which comprises a Freon-type propellant in a quantity which contributes less than 50 B.t.u. heat of evaporation per pound of total aerosol charge at one atmosphere. It is advantageously packaged in an aerosol-type container equipped with a meter-type valve rated for discharging less than about 70 milligrams per shot. The container should be equipped with a discharge conduit of from 1.5 to 2.5 inches in length and a bore size of from about 0.010 to about 0.03 inches in diameter.

3,624,220

EXTRACTION OF ANOREXIGENIC AND FAT-MOBILIZING SUBSTANCES FROM ANIMAL URINE

John R. Beaton, and James A. F. Stevenson, both of London, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed June 1, 1965, Ser. No. 460,325

Int. Cl. A61k *17/00*

U.S. Cl. 424—99 2 Claims

This invention relates to the recovery of anorexigenic and fat-mobilizing substances from the urine of normal fasting or cold-acclimatized animals.

3,624,221

METHOD OF DISTRIBUTING THE SEBACEOUS SECRETIONS OF THE SKIN

Burkhart Lange, Basel, Switzerland, assignor to Ciba Corporation, New York, N.Y.

Filed May 4, 1965, Ser. No. 453,200

Int. Cl. A61k *7/00*

U.S. Cl. 424—365 6 Claims

A method of distributing the sebaceous secretions of the skin which comprises applying water soluble ester-ether compounds to the skin.

3,624,222

PRESERVATIVE AND NITRATE REDUCING AGENT FOR RAW AGRICULTURAL CROPS

Rolland W. Nelson, 1125 18th St., West Des Moines, Iowa

Filed Mar. 22, 1966, Ser. No. 542,441

Int. Cl. A01n *13/00*

U.S. Cl. 424—128 1 Claim

A preservative and nitrate reducing agent for raw agricultural crops consisting of an inorganic acid, namely, phosphoric acid, and an organic substance consisting substantially of propionic acid. The method of reducing the nitrate value of crops by treating said crops with the foregoing composition.

3,624,223

BLOOD TYPE INDICATOR

William J. Smythe, Rye, N.Y., assignor to Technicon Instruments Corporation, Chauncey, N.Y.

Filed Dec. 17, 1964, Ser. No. 419,128The portion of the term of the patent subsequent to July 31, 1984, has been disclaimed.

Int. Cl. G01n *31/02*

U.S. Cl. 424—11 12 Claims

A system for testing a plurality of samples for a characteristic, such as the blood group typing of blood samples, includes supplying the samples seriatim as a flowing stream, adding a reagent which will provide an agglutination-type reaction with samples having a predetermined characteristic, continuously concentrating any agglutinated-type material in each sample into a predetermined stratum and continuously separating this stratum from the remainder stratum, and continuously disposing one of these strata on the surface of a continuously advancing medium. The surface of the medium may be examined for the presence of agglutinated-type material. Each sample may be divided into quotients and each treated with a different reagent, and the resulting strata may be disposed on the same medium. In any event, the reaction occurs in the flowing stream, and the results are disposed on the medium for examination and storage.

3,624,224

NOVEL FIRST AID PRODUCTS

Ling Wei, Watchung, and Robert Marchisotto, East Brunswick, both of N.J., assignors to Schering Corporation, Bloomfield, N.J.

Filed Dec. 22, 1969, Ser. No. 887,355
Int. Cl. A61f 13/00; A61l 15/00
U.S. Cl. 424--28 8 Claims

Disclosed herein is a portable disposable first aid pad impregnated with a film-forming composition consisting essentially of specified amounts of germicidal quaternary ammonium halide, a local anesthetic, a water soluble polyoxyethylene-polyoxypropylene block polymer and certain nonionic surface active agents.

3,624,225

CEPHALOSPORIN COMPOSITIONS

Cynthia Hilda O'Callaghan, Gerrards Cross, England, assignor to Glaxo Laboratories Limited, Greenford, England

Filed June 20, 1967, Ser. No. 647,303
Claims priority, application Great Britain, June 24, 1966, 28,522/66
Int. Cl. A61k 21/00
U.S. Cl. 424—246 28 Claims

An antibiotic composition having as essential components (A) a broad spectrum cephalosporin antibiotic subject to degradation by a β-lactamase and (B) a cephalosporin antibiotic resistance to degradation by the β-lactamase whereby the broad spectrum antibiotic is protected against such degradation.

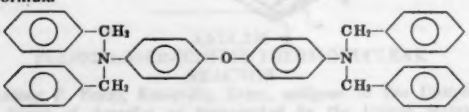
3,624,226

ELECTROGRAPHIC ORGANIC PHOTOCONDUCTOR COMPRISING OF N,N,N',N', TETRABENZYL 4,4'OXYDIANALINE

Merwin Frederick Hoover, and Dallas L. Schiegg, both of Pittsburgh, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Mar. 9, 1970, Ser. No. 17,932
Int. Cl. G03g 5/06
U.S. Cl. 96—1.5 4 Claims

The present invention relates to the composition of N,N,N', N,' tetrabenzyl 4,4' oxydianaline represented by the formula



and its use as an organic photoconductor for preparing photoconductive layers.

3,624,227

PROCESS OF PREPARING POSITIVE ACTING DIAZO PRINTING PLATE

Ho Chien Hwang, Peabody, Mass., assignor to Sumner Williams Inc., East Boston, Mass.

Filed Mar. 6, 1970, Ser. No. 17,344
Int. Cl. G03f 7/02
U.S. Cl. 96—33 4 Claims

A positive wipe-on printing plate of commercial feasibility is prepared by applying a layer of silicone resin to exposed, diazo oxide sensitizing layer and then applying developer.

3,624,228

HALOGEN LIBERATING/COLOR FORMER LIGHT SENSITIVE SYSTEMS HAVING INCREASED SPEED

Richard A. Fotland, Lyndhurst, Ohio, assignor to Horizons Incorporated, a Division of Horizons Research Incorporated

Filed June 9, 1969, Ser. No. 831,701
Int. Cl. G03c 5/24, 1/72
U.S. Cl. 96—48 9 Claims

Nonsilver, organic, dry-processed, violet and blue radiation sensitive free-radical films for recording and duplicating applications. The latent image may be optically developed in a period of 2 to 3 seconds by uniform exposure to red and near infrared radiation after an initial exposure in the region of 1 to 10 mj./cm.² in the violet or blue regions of the spectrum. The image color is close to neutral. Fixing is accomplished by heating the film to a temperature of 150° C. for 60 seconds.

3,624,229

FIXATION OF ANIONS IN HYDROPHILIC COLLOID MEDIA

Daniel Maurice Timmerman, Mortsel; August Jean Van Paesschen, Antwerp, and Albert Emiel Van Hoof, Berchem, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed Mar. 26, 1969, Ser. No. 810,816
Claims priority, application Great Britain, Mar. 26, 1968, 14,523/68
Int. Cl. G03c 1/84
U.S. Cl. 96—84 11 Claims

Process of mordanting a hydrophilic colloid medium with an addition polymer containing 50–95 mole percent of 2-methyl,5-vinyl-pyridinium units or a water-soluble pyridinium salt thereof and the balance of N-aliphatic,2-methyl,5-vinyl-pyridinium units, and a hydrophilic colloid composition containing an acid dye mordanted with such polymer.

3,624,230

PROCESS FOR CONTINUOUSLY SCRAMBLING EGGS

Albert H. Robinson, Jr., Plymouth Meeting, Pa., assignor to Campbell Soup Company, Camden, N.J.

Filed Apr. 1, 1969, Ser. No. 811,941
Int. Cl. A23l 1/32
U.S. Cl. 99—113 8 Claims

A process for continuously scrambling eggs to produce a product having a pleasing taste and appearance in which an egg slurry is preheated to a temperature below its coagulation point before it is introduced into a coagulating-chamber. Jets of steam are directed against the slurry as it passes through the chamber to coagulate the egg slurry. The supply of steam to the chamber is regulated to maintain the temperature of the cooked product substantially within the range of 175° to 195° F. as it is discharged from the chamber to insure the formation of a product which has a good overall appearance and pleasant taste.

3,624,231

METHOD FOR PRODUCING A USEFUL CARBON AGGREGATE FROM A PUFFING PETROLEUM COKE

Leslie H. Juel, Lewiston, and Robert W. Rosene, Grand Island, both of N.Y., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Original application May 29, 1969, Ser. No. 833,851, now Patent No. 3,506,745, dated Apr. 14, 1970. Divided and this application Sept. 29, 1969, Ser. No. 861,998
Int. Cl. C09c 1/44
U.S. Cl. 106—307 2 Claims

A useful carbon aggregate is produced. The aggregate is made from heat-treated and/or graphitized "puffing" petroleum coke which has been heated in the presence of a puffing inhibiting agent. The heat-treated coke is advantageously employed as an aggregate in the production of graphite bodies whose thermal shock resistance properties are enhanced thereby.

3,624,232

CURABLE POWDER COATING COMPOSITION COMPRISING A MIXTURE OF AN ALKOXYLATED POLYAMINE-ALDEHYDE RESIN AND A POLYESTER RESIN

Cornelis Van Dorp, Hortensiastrant 91, Zwolle; Nantko Kloos, Verversweg 1, Heino, and Frits Visser, Koestraat 9 c, Zwolle, all of Netherlands

Filed Jan. 26, 1970, Ser. No. 5,941
Claims priority, application Luxembourg, Jan. 28, 1969, 57.855
Int. Cl. B44d *1/094, 1/095*
U.S. Cl. 117—21 9 Claims

Curable powder coating resin compositions comprise a small proportion of an alkoxylated polyamine-aldehyde resin and a polyester resin having an acid number below 20, a melting point between 60° and 130° C., the acid component comprising a dibasic aromatic carboxylic acid and the alcohol component comprising diols such as 2,2-di(4-beta-hydroxyethoxy-phenyl-) propane, certain glycidyl esters and certain dihydric aliphatic alcohols.

The curable powder-coating composition is applied to a substrate by a powder-coating process and the coated substrate is heated to a temperature of from 120° to 220° C. for 10 to 60 minutes.

3,624,233

METHOD TO IMPROVE THE IMPREGNATION OF WOOD

Marcel Goulet, 1529 Garnier St., Quebec, 6, Canada

Original application May 23, 1968, Ser. No. 731,626, now Patent No. 3,501,053, dated Apr. 21, 1970. Divided and this application Sept. 9, 1969, Ser. No. 856,479
Int. Cl. B44d *1/26;* B27r *5/04*
U.S. Cl. 117—57 13 Claims

A method to impregnate wood with a preservative, fire-retarding, stabilizing or the like wood treating agent, comprising compressing the wood across its grain for a short period of time, allowing the wood to recover from the compression and impregnating the wood with the agent while varying the pressure conditions of the wood environment.

3,624,234

FRICTION MATERIAL

Rudolph Edward Steck, Stratford, Conn., assignor to Raybestos-Manhattan, Inc., Passaic, N.J.

Filed May 1, 1969, Ser. No. 821,076
Int. Cl. B32b *19/08;* C09k *3/14*
U.S. Cl. 117—126 AF 4 Claims

Essentially inorganic friction material comprising an asbestos matrix impregnated with a binder comprising principally lithium polysilicate and a minor amount of sodium methyl siliconate to enhance abrasion resistance.

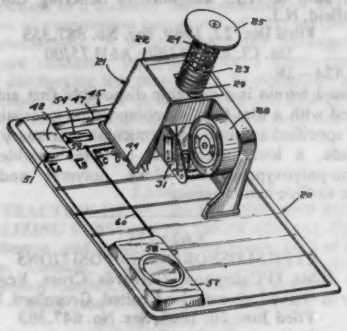
3,624,235

SUPPORT FOR POSITIONING A DEVICE FOR APPLYING TAPE SECTIONS TO ARTICLES AND THE ARTICLES IN PREDETERMINED RELATIONSHIPS

Boris Kleid, Newton Highlands, Mass., assignor to Tapeler Corporation, Newton, Mass.

Filed Sept. 5, 1969, Ser. No. 855,557
Int. Cl. B32b *31/00*
U.S. Cl. 156—530 20 Claims

A support is disclosed providing predetermined positions for a device for applying a tape section to an article and predetermined positions for articles relative thereto. The support also has depressions enabling tape sections to be applied to the articles with free portions projecting from an edge thereof.

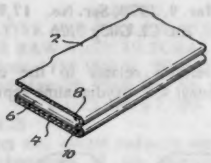


3,624,236

ROLLED EDGE SEALED CORRUGATED PAPERBOARD

Robert H. Frappier, Agawam, Mass.; Hal W. Tanner, Jr., Georgetown, S.C., and William O. Wagers, Massillon, Ohio, assignors to International Paper Company, New York, N.Y.

Filed Aug. 21, 1969, Ser. No. 852,038
Int. Cl. B32b *3/04*
U.S. Cl. 161—104 3 Claims



A corrugated core paperboard in which the edges of the facing sheets are rolled inwardly toward each other and tucked into the end of the corrugated core convolutions to form an enclosure therefor; the method including feeding of the board along a path, slitting the end of the core by cutting or crushing the core along a line intermediate the facing sheets and rolling and tucking the end edges of the facing sheets into the slit; the apparatus including driven belts between which the board is fed along a path, a knife support along the edge of the path through which the edge of the board is fed and dies having edge engaging surfaces for rolling and tucking the ends of the facing sheets into the core.

3,624,237

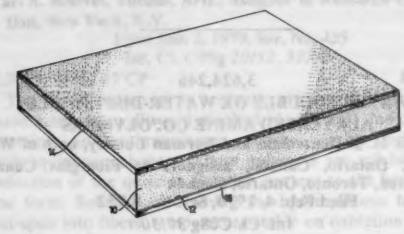
APPARATUS FOR BONDING TOGETHER METAL SHEETS BY EXPLOSIVE WELDING

Per Ingemar Persson, Huddinge, Sweden, assignor to Nitro Nobel AB, Gyttorp, Sweden

Filed Sept. 23, 1969, Ser. No. 860,280
Claims priority, application Sweden, Sept. 23, 1968, 12802/1968
Int. Cl. B32b *3/26*
U.S. Cl. 161—160 4 Claims

Apparatus for explosively welding two metal layers together by providing one layer with a carrier of open-celled

foamed plastic material and depositing explosive salt in

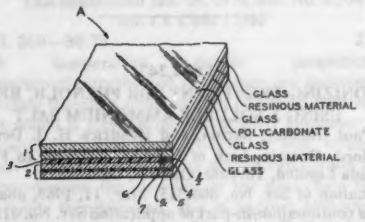


crysta state on the walls of the cells of such foamed material.

3,624,238
LAMINATED TRANSPARENT BULLET RESISTING STRUCTURE

Daniel H. McKenzie, Germantown, Tenn., assignor to Binswanger Glass Co., Richmond, Va.

Filed Mar. 24, 1969, Ser. No. 809,563
Int. Cl. B32b *17/10, 27/30*
U.S. Cl. 161—183 **8 Claims**

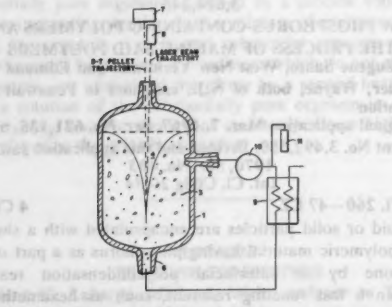


A bullet resisting structure of laminated character comprising outer faces or plies of safety glass with an intermediate ply formed of a polycarbonate resin.

3,624,239
PULSED LASER-IGNITED THERMONUCLEAR REACTOR

Arthur P. Fraas, Knoxville, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 11, 1970, Ser. No. 10,516
Int. Cl. G21b *1/00*
U.S. Cl. 176—1 **10 Claims**

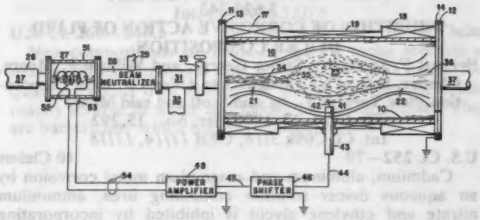


A thermonuclear reactor, for providing heat input to a power producing system or the like, wherein pellets, singly injected, of frozen thermonuclear fuel are ignited with a pulsed laser beam. Ignition takes place within a void in liquid lithium contained within a pressure vessel. The void in the liquid lithium is created by injecting the lithium tangentially into the pressure vessel, by spraying the lithium through jets, or a combination thereof. Introducing bubbles in the liquid decreases the shock wave forces at the pressure vessel wall. The lithium, which is heated by the thermonuclear reactions created within the void, is passed through a heat exchanger and tritium recovery system for heating a working fluid for the power producing system and for recovery of the tritium produced in the lithium by the reactions.

3,624,240
FEEDBACK STABILIZATION OF A MAGNETICALLY CONFINED PLASMA

Charles C. Damm, Alamo, and Richard F. Post, Walnut Creek, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 24, 1970, Ser. No. 22,294
Int. Cl. G21b *1/00*
U.S. Cl. 176—7 **10 Claims**

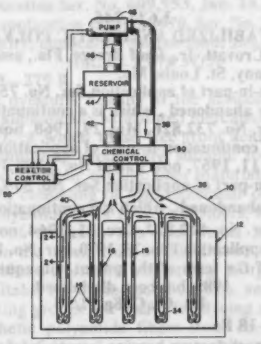


A high-temperature plasma is produced by the injection and trapping of energetic particles in a magnetic field containment zone. Detectors are arranged proximate to the plasma to detect electrostatic or electromagnetic signals produced by instabilities in the plasma containment system. The detected signals are amplified and shifted in phase either positively or negatively with respect to the instability oscillation and are then utilized to modulate an energetic particle beam which is then directed into the plasma containment zone wherein the modulation component of the injected beam interacts with the plasma to minimize or eliminate the instability oscillation of the plasma. Stable containment of the plasma is thereby promoted.

3,624,241
METHOD AND APPARATUS FOR CONTROLLING THERMAL NUCLEAR REACTORS

John L. Power, Berea, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Feb. 10, 1970, Ser. No. 10,162
Int. Cl. G21c *7/22*
U.S. Cl. 176—86 L **4 Claims**



A power control system for a thermal nuclear reactor utilizes core tubes containing a solid sorbent, a thermal neutron

absorbing material in ionic form, and a circulating aqueous solution. Control of the reactor is achieved by regulating the amount and distribution of the ionic poison retained by the solid sorbent in the core tubes. The amount of poison retained by the solid sorbent is regulated by controlling the chemical composition of the circulating solution. This regulation may be assisted by altering the chemical properties of the solid sorbent while the reactor is operating.

3,624,242

PROCESS OF MACHINING A METAL IN CONTACT WITH A CUTTING FLUID COMPRISING A CHLOROFLUOROALKANE

Warren Ray Steinacker, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 9, 1970, Ser. No. 1,850
Int. Cl. C10m *1/30*
U.S. Cl. 252—58 1 Claim

The process of machining a metal in contact with a cutting fluid comprising trichlorofluoromethane.

3,624,243

INHIBITION OF CORROSIVE ACTION OF FLUID DEICER COMPOSITION

Herbert F. Scott, Jr., Prince George, and William P. Moore, Chester, both of Va., assignors to Allied Chemical Corporation, New York, N.Y., by said Scott and said Moore

Filed Feb. 27, 1970, Ser. No. 15,292
Int. Cl. C09k *3/18*; C23f *11/14*, *11/18*
U.S. Cl. 252—70 10 Claims

Cadmium, aluminum and magnesium metal corrosion by an aqueous deicer solution containing urea, ammonium nitrate and ethylene glycol is inhibited by incorporating therein about 0.05 percent to 0.40 percent by weight of a water-soluble mercaptobenzothiazole salt and about 0.05 percent to 0.40 percent by weight of a water-soluble chromate salt. The deicer solution is preferably for use to deice aircraft runways.

3,624,244

METHOD OF PREPARING INORGANIC POLYMERS

Piero Luigi Nannelli, King of Prussia, and Hyman David Gillman, Norristown, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Mar. 11, 1970, Ser. No. 18,751
Int. Cl. C08g *33/16*, *33/20*
U.S. Cl. 260—2 M 6 Claims

Chromium (III) hydroxyaquo bis(phosphinate) and bis(arsinate) polymers of the recurring unit of the formula $[Cr(H_2O)(OH)(OMR_1R_2O)_2]$ where R_1 and R_2 are inert organic groups and M is phosphorus or arsenic, are prepared by reacting a water-soluble chromium (III) salt with substituted potassium or sodium phosphinate or arsinate in aqueous medium, in the presence of an alkaline neutralizing agent. The polymers are used as coatings which will be subjected to high temperature environment.

3,624,245

HEAT STABILIZED ANTISTATIC POLYAMIDES

Lawrence W. Crovatt, Jr., Gulf Breeze, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 759,210, Sept. 11, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 732,826, May 29, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 674,662, Oct. 11, 1967, now Patent No. 3,388,104, which is a continuation-in-part of application Ser. No. 579,509, Sept. 15, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 422,822, Dec. 31, 1964, now abandoned. This application Feb. 25, 1970, Ser. No. 14,206
The portion of the term of the patent subsequent to June 11, 1985, has been disclaimed.
Int. Cl. C08g *51/58*
U.S. Cl. 260—18 R 11 Claims

Tensile strength loss on heating is reduced, in polycarbonamides containing between 0.1 and 20.0 weight percent polyalkoxylated triglyceride of a fatty acid containing from 10 to 30 carbon atoms, by adding from 0.01 to 2.0 weight percent of a sterically hindered phenol.

3,624,246

WATER-SOLUBLE OR WATER-DISPERSIBLE ALKYLATED AMINE COPOLYMERS

Hendrik H. J. Deuzeman, and Norman Lumley, both of Watford, Ontario, Canada, assignors to Fiberglas Canada Limited, Toronto, Ontario, Canada

Filed Feb. 4, 1970, Ser. No. 8,752
Int. Cl. C08g *37/30*
U.S. Cl. 260—21 4 Claims

A liquid thermosetting alkylated amine copolymer resin is produced by the reaction of melamine, urea, formaldehyde, and methanol in the presence of an alkanol amine and a fatty acid. The amine-acid residue in the resulting resin product acts as an emulsifier for mineral oil and other materials which may be mixed with the resin after production. The catalyst also acts as a surfactant when the resin-mineral oil emulsion is diluted with water for use as a binder in the production of glass fiber articles, and enhances the wet-out properties of the emulsion towards pigments.

3,624,247

DEIONIZING TREATMENT FOR PHENOLIC RESINS USING A SOLUBLE AMMONIUM SALT

Kurt Paul Gladney, Sarnia, and Hendrick H. J. Deuzeman, Watford, Ontario, both of Canada, assignors to Fiberglas Canada Limited, Toronto, Ontario, Canada

Continuation of Ser. No. 806,315, Mar. 11, 1969, abandoned, and a continuation-in-part of application Ser. No. 415,457, Dec. 2, 1964, now Patent No. 3,432,453. This application Mar. 26, 1970, Ser. No. 20,480
The portion of the term of the patent subsequent to Mar. 11, 1986, has been disclaimed.
Int. Cl. C08g *37/08*, *51/24*
U.S. Cl. 260—29.3 10 Claims

In the formation of a resin solution, the removal of residual calcium catalyst ions is effected by treatment with an alkaline solution of an ammonium salt having an ion which forms an insoluble salt with calcium ion, at a pH of from 5 to 6.5 and subsequently raising the pH to about 7 by the addition of ammonia.

3,624,248

NEW PHOSPHORUS-CONTAINING POLYMERS AND THE PROCESS OF MAKING SAID POLYMERS

John Eugene Santo, West New York, and Jan Edmond Vandegaer, Wayne, both of N.J., assignors to Pennwalt Corporation

Original application Mar. 7, 1967, Ser. No. 621,135, now Patent No. 3,492,380. Divided and this application Jan. 6, 1970, Ser. No. 403
Int. Cl. C08g *20/34*
U.S. Cl. 260—47 CZ 4 Claims

Liquid or solid particles are encapsulated with a shell of solid polymeric material having phosphorus as a part of the backbone by an interfacial polycondensation reaction between a fast reacting reactant, such as hexamethylene diamine, and an arene having as substituents—COX and/or $-OPOX_2$, at least one $-OPOX_2$, such as p-(chlorocarbonyl)-phenyldichlorophosphate. Other polyfunctional reactants, such as diethylene triamine and polymethylene polyphenylisocyanate, are desirably present.

3,624,249

PYRROLONE-ANTHRAQUINONE POLYMERS

Carl S. Marvel, Tucson, Ariz., assignor to Research Corporation, New York, N.Y.

Filed Jan. 2, 1970, Ser. No. 425
Int. Cl. C08g *20/32, 33/02*
U.S. Cl. 260—47 CP 8 Claims

The condensation of an aromatic tetraamine with an aromatic tetracarboxylic acid dianhydride, at least one of which contains an anthraquinone moiety, yields pyrrolone-anthraquinone polymers. These polymers are solubilized by reduction of the quinone function present to the hydroquinone form. Solutions containing the hydroquinone form are wet-spun into fibers, temperature-stable on oxidation back to the quinone form.

3,624,250

COPOLYMERS OF ETHYLENE/TETRAFLUOROETHYLENE AND OF ETHYLENE/CHLOROTRIFLUOROETHYLENE

Dana Peter Carlson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 777,166, Nov. 19, 1968, now abandoned, Continuation-in-part of application Ser. No. 853,923, Aug. 28, 1969, now abandoned.
This application Jan. 20, 1970, Ser. No. 4,394
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.75 21 Claims

High temperature tensile properties of ethylene/tetrafluoroethylene copolymer are improved by incorporating therein a small amount of a third monomer component which is a copolymerizable vinyl monomer which is telogenically inactive and provides a side chain in the resultant copolymer, containing at least two carbon atoms. In one embodiment, the elements in the side chain have only single bonds therebetween, and in another embodiment the side chain is an aromatic ring. The same effect is obtained for ethylene/chlorotrifluoroethylene copolymer. The resultant copolymers are especially useful as insulation coating for wire to be exposed to high temperature service.

3,624,251

ORGOTEIN PURIFICATION PROCESS BY HEATING ABOVE 65° C.

Wolfgang Huber, San Francisco, Calif., assignor to Diagnostic Data, Inc., Palo Alto, Calif.

Filed Jan. 16, 1970, Ser. No. 3,492
Int. Cl. A61k *17/00;* C07g *7/04*
U.S. Cl. 260—113 14 Claims

Heat labile tenacious proteins present in samples of substantially pure orgotein produced by a process which comprises a heating step in which a mixture of proteins comprising the orgotein protein and substantial amounts of other proteins are heated under conditions which do not affect the orgotein, are eliminated therefrom by a second heating step of a solution of the substantially pure orgotein in a buffer containing divalent metal ions at a temperature higher than employed in the prior heating step.

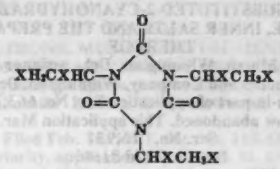
3,624,252

TRIAZINE COMPOUNDS

Robert G. Labarge, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 2, 1970, Ser. No. 19,151
Int. Cl. C07d *55/14*
U.S. Cl. 260—248 NS 3 Claims

New and useful s-triazine compounds corresponding to the formula



where X is bromo- or chloro- are disclosed; the compounds are suitable for use as fungicides.

3,624,253

HEXAMETHYLENETETRAMINE ADDUCTS WITH HALOACETIC ACID ESTERS

Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 5, 1970, Ser. No. 16,977
Int. Cl. C07d *55/14*
U.S. Cl. 260—248.5 9 Claims

New compositions are made by the 1:1 molar reaction of hexamethylenetetramine with a haloacetic acid ester. The quaternary salts thus formed are colorless crystalline solids, readily soluble in water and having biological activity. They are bactericides which also have fungicidal activity.

3,624,254

HEXAMETHYLENETETRAMINE ADDUCTS WITH HALOACETONITRILES

Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 5, 1970, Ser. No. 16,978
Int. Cl. C07d *55/14*
U.S. Cl. 260—248.5 4 Claims

New compositions are made by the 1:1 molar reaction of hexamethylenetetramine with a haloacetonitrile. The quaternary salts thus formed are colorless crystalline solids, readily soluble in water and having biological activity. They are bactericides which also have fungicidal and herbicidal activity.

3,624,255

NITRO-ACRIDONE THIOETHERS

Kurt E. Burdeska, Basel; Hans Bosshard, Basel, and Andre Pugin, Riehen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of application Ser. No. 812,953, Mar. 20, 1969, now Patent No. 3,541,099, which is a continuation of application Ser. No. 609,953, Jan. 16, 1967. This application Jan. 16, 1970, Ser. No. 3,491
Claims priority, application Switzerland, Jan. 21, 1966, 849/66
Int. Cl. C07d *37/30*
U.S. Cl. 260—279 R 17 Claims

Acridone dyestuffs bearing at the acridone nucleus in 1-position an aliphatically substituted mercapto group and in 4-position NO_2 of which those free from acidically water-dissociable solubilizing groups are suitable for the dyeing of hydrophobic synthetic organic fiber materials, especially textile materials consisting of high-molecular organic esters, of synthetic polyamide or of polyolefin fibers, for the dyeing or pigmenting of lacquers, oils and waxes and of cellulose derivatives in the mass; while acid addition salts of the above-defined acridone dyestuffs with strong inorganic or organic acids are suitable for dyeing acrylic fibers, and those containing solubilizing groups are useful for dyeing or printing natural or synthetic polyamide fibers from an acid to neutral bath; methods of dyeing organic materials and especially the aforesaid fibers with the novel dyestuffs suitable therefor, and such fibers dyed with the novel dyestuffs.

3,624,256

1,1,1-TRISUBSTITUTED-2-CYANOHYDRAZINIUM HYDROXIDE, INNER SALTS AND THE PREPARATION THEREOF

Frank Dennis Marsh, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 663,212, Aug. 25, 1967, now abandoned. This application Mar. 5, 1970, Ser. No. 16,951

Int. Cl. C07d *31/46*

U.S. Cl. 260—296 7 Claims

1,1,1-Trisubstituted-2-cyanohydrazinium hydroxide, inner salts, obtained by reaction of tertiary amines and cyanogen azide, useful as dispersing agents for suspending solids in aqueous media and as intermediates for producing buffering agents are claimed.

3,624,257

4-DIMETHYLAMINOMETHYL-1,3-DITHIOLANE-2-THIONE

Michihiko Sakai, Kyoto; Masayuki Kato, Osaka; Hikoichi Hagiwara, deceased, late of Osaka (by Reiko Hagiwara, executor), and Kazuo Konishi, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Original application , Ser. No. 612,059, now Patent No. 3,501,502, dated Mar. 17, 1970, which is a division of application Ser. No. 205,088, June 25, 1963, now Patent No. 3,318,936, dated May 9, 1967. Divided and this application Feb. 13, 1970, Ser. No. 11,317

Int. Cl. A01n *9/12*; C07d *71/00*

U.S. Cl. 260—327 M 1 Claim

This invention relates to novel compounds and specified use thereof. More particularly, the instant invention is concerned with the new and useful compounds having in their molecule a tertiary amino group and two substituted thio groups, and with the utilization thereof as pesticides for e.g. agricultural and sanitary purposes.

3,624,258

PROCESS FOR THE PREPARATION OF ϵ-CAPROLACTONE

Sachio Ishimoto, Tokyo; Haruo Togawa, Iwakuni, and Yuitsu Honda, Iwakuni, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 16, 1970, Ser. No. 20,017

Claims priority, application Japan, Mar. 22, 1969, 44/21965

Int. Cl. C07d *9/00*

U.S. Cl. 260—343 8 Claims

Epsilon-caprolactone is prepared at high yields through an easy commercial operation by heating at least one compound selected from the group consisting of ϵ-hydroxycaproic acid, low polymerization products thereof and esters of said ϵ-hydroxycaproic acid and its low polymers, in the presence of a compound containing free alcoholic hydroxyl groups at such an amount that, when one ϵ-hydroxycaproic acid unit of the formula

$$0-(CH_2)-_5CO$$

contained in said compound is calculated as one molecule of ϵ-hydroxycaproic acid, total number of free alcoholic hydroxyl groups present in the reaction system should exceed the total number of carboxyl groups present in the reaction system, under such temperature and pressure conditions as will allow distillation of ϵ-caprolactone.

3,624,259

TETRACYCLIC COMPOUNDS

Eugene E. Galantay, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Original application Apr. 14, 1966, Ser. No. 542,494, now Patent No. 3,502,686, which is a continuation-in-part of application Ser. No. 455,989, May 14, 1965, now Patent No. 3,449,428. Divided and this application Dec. 30, 1969, Ser. No. 1,914

Int. Cl. C07c *49/76*, *49/82*, *131/00*

U.S. Cl. 260—479 R 5 Claims

1-nitroso-or 1-isonitroso-1,2,6,7-tetrahydro-11bH-benzo [j] benz[b[c,d]azulen-2-ones, which may be unsubstituted or substituted at the 3,4,5,8,9 and 10- positions, by hydroxy, lower alkoxy, lower alkanoyloxy or benzylocy functions, are useful as intermediates in preparation of corresponding 1-amino-1,2,6,7-tetrahydro-11bH-benzo [j]benz[c,d]azulenes which may be unsubstituted or substituted by an oxo or hydroxy function at the 2-position which compounds are useful as pharmaceuticals. Said intermediates bearing 1-nitroso or 1-isonitroso functions are obtainable by nitrosation of 1,2,6,7-tetrahydro-11bH-benzo-[j][c,d]azulen-2-one or an appropriate substituted derivative thereof.

3,624,260

NOVEL PHOSPHORUS AND SULFUR CONTAINING COMPOUNDS AND PROCESS FOR PREPARING SAME

Donald J. Peterson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Original application Mar. 13, 1967, Ser. No. 622,419, now Patent No. 3,502,731. Divided and this application Jan. 19, 1970, Ser. No. 4,020

Int. Cl. C07f *9/50*; C10m *1/46*; C11d *9/34*

U.S. Cl. 260—606.5 P 7 Claims

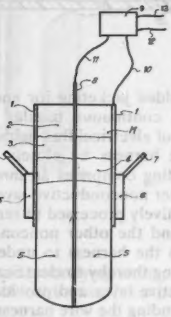
Alkylthiomethylmetal compounds prepared by reacting alkyl methyl sulfides with potent metalating agents, e.g., a complex between alkyllithium compounds and alkylenediamines; alkyl- or phenylsodium; or alkyl- or phenylpotassium; (2) the reactions of the alkylthiomethylmetal compounds with trialkyl- and triarylphosphites, mono- and dihalo and trihalo and pseudohaloalkyl- and arylphosphines, and (3) new compounds produced thereby containing phosphorous and sulfur.

ELECTRICAL

3,624,261
SELF-BAKING ELECTRODE STRUCTURE AND METHOD OF OPERATING SAME

Mario Cavigli, Mestre (Venice), Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

Filed Aug. 12, 1970, Ser. No. 63,251
Claims priority, application Italy, Aug. 22, 1969, 21150 A/69
Int. Cl. H05b 7/06
U.S. Cl. 13—18 8 Claims

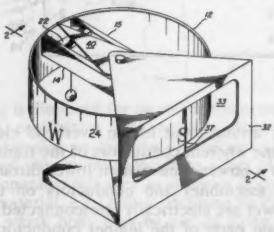


Improved results in operating self-baking electrodes are achieved by constantly maintaining a bar made of an electrically conductive material well immersed in a carbon mass contained within a metal shell, measuring the voltage drop between the bar and the metal shell and measuring a ratio between this voltage drop and the electrode current.

3,624,262
AVIATION TRAINING AID

Allan F. Greenwade, 1918 North 25th Pl., Phoenix, Ariz.

Filed Nov. 20, 1969, Ser. No. 878,516
Int. Cl. G09b 9/02
U.S. Cl. 35—10.2 6 Claims

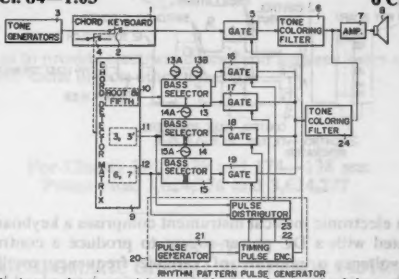


A training aid for simulating the actions of a magnetic compass under various flight conditions, including a pedestal extending upwardly from a base for supporting a compass wheel rotatably mounted thereon. A weight is suspended on a flexible cord from said compass wheel and a guide member extends from the pedestal. The flexible cord passes through an eyelet formed in the end of the guide member, thereby limiting the rotational movement of the compass wheel about the pedestal. A compass window is simulated through the utilization of a rigid sheet of material having an opening therein; the simulated compass window is positionable about the compass wheel by mounting the window frame for pivotal movement about the pedestal. The simulated compass window is provided with a lubber line.

3,624,263
ELECTRONIC MUSICAL INSTRUMENT WITH AUTOMATIC BASS PERFORMANCE CIRCUITRY

Yasuji Uchiyama, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Feb. 16, 1971, Ser. No. 115,681
Claims priority, application Japan, Feb. 16, 1970, Feb. 16, 1970, Feb. 16, 1970, Apr. 1, 1970; 45/12786, 45/12787, 45/12788, 45/27177
Int. Cl. G10h 1/00
U.S. Cl. 84—1.03 6 Claims

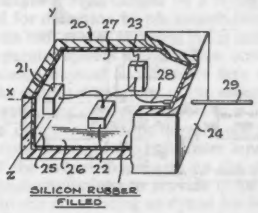


This invention provides an electronic musical instrument capable of carrying out bass performance conforming with chord performance by merely depressing keys in a keyboard for the chord performance. To this end, there are provided a chord detector for detecting the type of the chord including various notes, that is, root, fifth, major on minor third, and major sixth or minor seventh notes when the keys of the keyboard are depressed for chord performance, and bass selectors responsive to the outputs from the chord detector for selectively deriving bass tone signals corresponding to respective notes of the chord from tone generators and supplying the derived bass tone signals to respective bass gate circuits. The bass gate circuits are sequentially opened by timing pulses from a rhythm pattern pulse generator in a specific order conforming with chord performance, thereby providing automatic bass performance in a desired rhythm.

3,624,264
METHOD AND APPARATUS FOR SOUND AND VIBRATION DETECTION

Arnold Lazarus, 43 Dore St., San Francisco, Calif.

Filed Feb. 18, 1970, Ser. No. 12,354
Int. Cl. G10d 5/00
U.S. Cl. 84—1.14 13 Claims

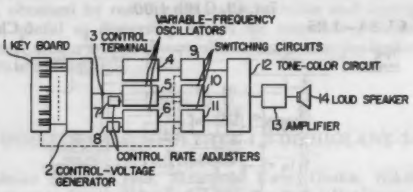


A triple-axis shockproof and waterproof vibration transducer is disclosed for detecting vibrations in general and sound from a musical instrument in particular, especially one having a resonant cavity. The transducer includes three piezoelectric vibration detectors, each oriented to detect vibrations along a different one of three orthogonal axes established by walls of a sealed enclosure filled with silicon rubber. All detectors are connected in parallel to the input of a noninverting operational amplifier which adds the separate voltages produced proportional to vibrations along the three orthogonal axes. A universal wax is employed to attach the transducer to the optimum point of the instrument as determined empirically.

3,624,265
TONE-GENERATING DEVICE FOR ELECTRONIC MUSICAL INSTRUMENT

Shigeru Yamada, 39-14, Nakazawa-cho, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Mar. 17, 1970, Ser. No. 20,165
Int. Cl. G10h 1/06
U.S. Cl. 84—1.19 2 Claims

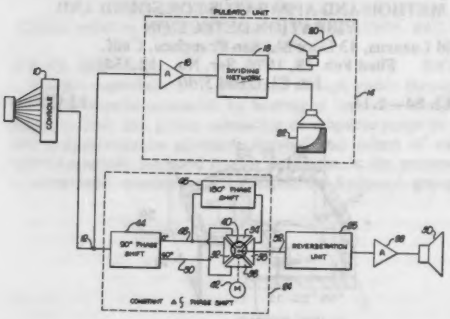


An electronic musical instrument comprises a keyboard associated with a DC power source to produce a controlling DC voltage, a plurality of variable frequency oscillators which produce tone signals of frequencies determined by the controlling DC voltage and which include a control rate adjuster so that the oscillators are always in harmonic relations very approximately, switching circuits for switching said tone signals, and means to convert the tone signals into sounds.

3,624,266
ELECTRONIC MUSICAL INSTRUMENT WITH DUAL CHANNELS FOR REVERBERATION AND PULSATO

Paul H. Sharp, Sierra Madre, Calif., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed July 30, 1969, Ser. No. 846,117
Int. Cl. G10h 1/04
U.S. Cl. 84—1.24 11 Claims

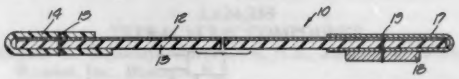


A reverberation unit derives an instrument signal through an electrical phase shift vibrato device that imposes a maximum frequency deviation that is substantially constant for all notes in the musical range. The inherent comb-shaped frequency response of the reverberation device relatively attenuates certain notes. A second channel that includes acoustic pulsato apparatus derives instrument signal independently of the electrical vibrato device and provides with the first channel a distinct component to the total pulsato effect by virtue of the independency. Cessation of primary instrument signal provides a nonpulsato decaying reverberation the frequency response characteristic of which is substantially uniform due to the constant maximum frequency deviation pattern imposed prior to the cessation of signal.

3,624,267
WRAPAROUND ELECTRICAL SHIELDING JACKET AND METHOD FOR WIRE HARNESS

Walter A. Plummer, 3546 Crownridge Drive, Sherman Oaks, Calif.

Filed Sept. 28, 1970, Ser. No. 76,072
Int. Cl. H01b 11/06
U.S. Cl. 174—36 9 Claims

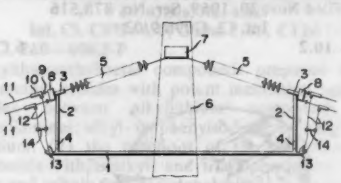


Wraparound shielded jacketing for enshrouding wire harness to provide a continuous tubular conductive barrier against the passage of electrical flux fields and held snugly assembled about the harness by closely spaced servings of cording. The jacketing comprises an inner conductive layer laminated to an outer nonconductive layer and having its opposite edges respectively processed to render one conductive on both surfaces and the other nonconductive, the former being assembled to the harness to underlie the overlapped edges of the jacketing thereby to electrically interconnect the edge of the conductive layer and provide a continuous conductive tube surrounding the wire harness.

3,624,268
JUMPER ARRANGEMENT FOR OVERHEAD TRANSMISSION LINES

Akira Otsuki, and Kimikazu Numata, both of Tokyo, Japan, assignors to The Fujikura Cable Works, Ltd., Tokyo, Japan

Filed Aug. 18, 1970, Ser. No. 64,735
Claims priority, application Japan, Aug. 27, 1969, Aug. 28, 1969; 44/80782, 44/81225
Int. Cl. H02g 7/00
U.S. Cl. 174—43 10 Claims



In a jumper arrangement for an overhead electric power transmission line wherein conductors of the transmission line are secured to a power transmission tower through strain insulator string assemblies and conductors on the opposite sides of the tower are electrically interconnected by a jumper conductor, main parts of the jumper conductor are formed by a rigid jumper rod and each end of the jumper rod is connected with a supporting fixture interposed between the conductor of the transmission line and the strain insulator string assembly through a pivotally connected supporting means. The jumper rod is further connected to the conductor of the transmission line through at least one electroconductive flexible connecting wire.

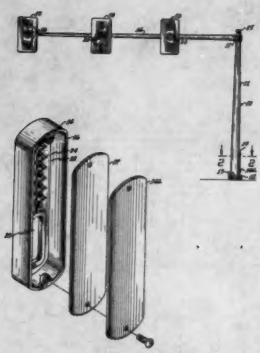
3,624,269
COLUMN FOR SUPPORTING ELECTRICAL DEVICES EMBODYING A HANDHOLE ELECTRICAL TERMINAL COMPARTMENT NEAR ITS BASE

Leonard H. Latta, Del City, Okla., assignor to VePed Traffic Controls, Inc., Oklahoma City, Okla.

Filed Mar. 9, 1970, Ser. No. 17,462
Int. Cl. E01f 9/01; F21s 1/10
U.S. Cl. 174—45 R 1 Claim

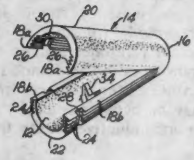
A vertical shaft, pillar, or column having a base and a

capital for supporting electrical devices such as lamps, traffic



signals and the like and embodying an improved integrally arranged handhole electrical terminal compartment.

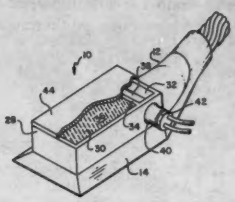
3,624,270
CONNECTING APPARATUS FOR TERMINATING ELECTRICAL CONDUCTORS
Rex O. Turner, 425 California Ave., Arroyo Grande, Calif.
Filed Feb. 24, 1970, Ser. No. 13,673
Int. Cl. H02g *15/08*
U.S. Cl. 174—87 4 Claims



A structure is disclosed for receiving the ends of a plurality of electrical conductors and holding them in clamped-together relationship so that the conductors are electrically interconnected yet are insulated from other objects. As disclosed, the apparatus includes an elongate body of resiliently deformable material, e.g., plastic, defining an elongate interior chamber, which body may be parted along mating edges to open the chamber. Variable-closure fastening means, in the form of interlocking ridges are defined at the mating edges to lock the body closed so that spaced-apart, opposed abutments (defined within the body and integral therewith) define a clamp (of variable size) to hold received conductors within the apparatus.

3,624,271
RAIL CONNECTORS
Robert H. Wittman, Arapahoe County, Colo., assignor to Hanlon & Wilson Company, Jeannette, Pa.
Filed Dec. 19, 1969, Ser. No. 886,658
Int. Cl. H05g *15/08*
U.S. Cl. 174—94 R 22 Claims

Electrical continuity of end-to-end rails having expansion and contraction gaps therebetween is established by connecting devices which are wires or cables having tabs formed with connecting portions that form an angle with the rails when the tabs are seated on the rails so that they may be conveniently explosively bonded to the rails by a charge positioned on such connecting portions. The connectors may be

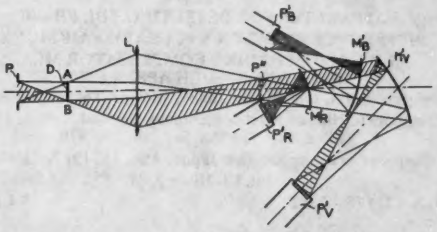


utilized to provide electrical connection between wires or cables and metal objects other than rails.

ERRATA

For Classes 174—129 and 174—138 see:
Patent Nos. 3,624,276 and 3,624,277

3,624,272
TRICHROMATIC OPTICAL SEPARATOR SYSTEM USING CONCAVE DICHROIC MIRRORS
Michel Favreau, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Feb. 9, 1970, Ser. No. 9,576
Claims priority, application France, Feb. 27, 1969, 05192
Int. Cl. G02b *27/10*
U.S. Cl. 178—5.4 E 5 Claims

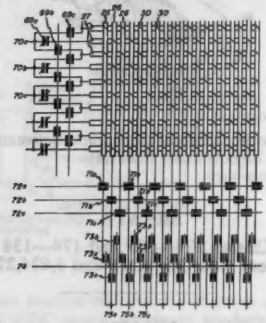


To prevent distortion during chromatic separation of images being scanned, for example by a flying spot scanner or the like, and for detection by photomultipliers associated, respectively, with red, green, and blue color components, the trichromatic separator system includes two, concave dichroic mirrors and located beyond a condenser lens which gives a real image of the output diaphragm of the objective lens, and a third, totally reflecting concave mirror, or a lens. The optical axes of the concave dichroic mirrors are inclined with respect to the optical axis of the condenser lens, and project a real image of the output diaphragm on the photosensitive surface of the photomultipliers to provide color video signals corresponding to the point being analyzed for brightness and color content. Preferably, the curvature of the mirrors is so chosen that the enlargement is in the neighborhood of unity so that the beams of light from the output diaphragm of the equipment generating the scanning light beams, falling on the mirrors, have a substantially constant angle of incidence.

3,624,273
FLAT SCREEN DISPLAY DEVICES USING AN ARRAY OF CHARGED PARTICLE SOURCES
Alfred J. Gale, 10 Diana Lane, Lexington, Mass.
Filed Nov. 22, 1968, Ser. No. 778,194
Int. Cl. H04n *3/14, 9/30*
U.S. Cl. 178—5.4 R 34 Claims

A display device utilizing an array of electron-emitting sources insulatively supported opposite a screen member so that each emitting source is in register with a selected area

element of such screen member. Means are provided for sequentially controlling the emission of electrons from such sources so that the emitted electrons impinge in an appropriate sequence upon the selected area elements of the screen member to produce an image thereon. An appropriate



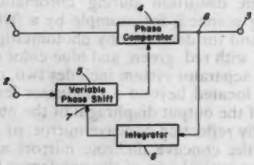
stereoscopic display of such image may be provided by using optical filters adjacent each selected area element so that certain selected portions of the visible spectrum are transmitted to the receiver from each such element as a result of the impingement of electrons thereon.

3,624,274

APPARATUS FOR DETECTING THE PHASE DIFFERENCE BETWEEN A PLURALITY OF SIGNALS AND COLOR-SHADING COMPENSATOR MEANS EMPLOYING SUCH APPARATUS

Shigeru Araki, and Masao Inaba, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Aug. 7, 1968, Ser. No. 750,970
Claims priority, application Japan, Aug. 11, 1967, 42/51509
Int. Cl. H04n 5/78
U.S. Cl. 178—5.4 R **9 Claims**



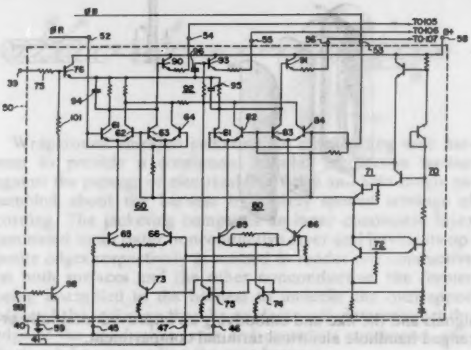
A method and the apparatus for detecting the phase difference between a pair of signals is provided wherein the DC phase difference is deleted from the output and only the AC phase difference is present therein. According to one embodiment of this invention, circuit apparatus is provided wherein a first signal whose phase is to be compared with a second signal is applied to a first input of phase comparator means. The second signal of the pair is applied to the input of variable phase shift circuit means whose output furnishes the second input for the phase comparator means. The amount of phase shift that is introduced to the second signal, to thereby remove the DC phase difference from the output of the apparatus for detecting the phase difference, is determined by the output of the phase comparator means as modified by a frequency selective circuit.

3,624,275

COLOR TELEVISION SIGNAL DEMODULATION SYSTEM WITH COMPENSATION FOR HIGH-FREQUENCY ROLLOFF IN THE LUMINANCE SIGNAL

Gerald K. Lunn, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 4, 1969, Ser. No. 873,839
Int. Cl. H04n 9/50
U.S. Cl. 178—5.4 MA **7 Claims**



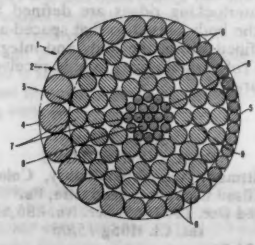
A silicon monolithic integrated circuit consisting of two sets of full-wave synchronous gated transistor demodulators is used to demodulate the red and blue color difference signals present in a composite television signal. Selected outputs of these demodulators are matrixed to provide the green color difference signal. The color difference signals are applied to the bases of emitter-follower output amplifiers which also are supplied with the brightness signals from an additional emitter-follower luminance amplifier, the output of which is coupled to the bases of the emitter-follower output amplifiers through coupling capacitors, which compensate for most of the high-frequency rolloff in the brightness signals and further provide filtering of carrier harmonics from the detected color reference signals. Collector current for the switching transistors in the demodulators is obtained from the emitter of the emitter-follower luminance amplifier, so that blanking may be accomplished by rendering the luminance amplifier nonconductive during the blanking intervals.

3,624,276

CONDUCTOR BUNDLE ARRANGEMENT

Charles B. Rawlins, and Fred R. Collins, both of Massena, N.Y., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 6, 1970, Ser. No. 78,469
Int. Cl. H01b 5/08; H02g 7/14
U.S. Cl. 174—129 R **10 Claims**



Conductor bundle arrangement comprising adjacently disposed conducting cable assemblies operatively interconnected to form a conductor bundle, each conducting cable assembly including an electrically conductive core, e.g. a helically laid multistranded core, having a composite substan-

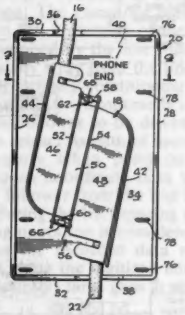
tially circular cross-sectional shape and a surrounding sheathing layer having a composite substantially annular cross-sectional shape with an exposed peripheral surface portion in the form of a multiplicity of helically oriented and adjacently disposed convex longitudinally extending arcuate ridges of progressively varying size, e.g. by providing said sheathing layer of varying diameter wires helically laid about the core in covering relation therewith, the sheathing layer including at each transverse section thereof at least one predetermined large size first ridge, e.g. wire, disposed at a first circumferential point and at least one predetermined small size last ridge; e.g. wire, disposed at a second circumferential point in diametric relation therewith, and a plurality of intermediately disposed ridges, e.g. wires, of progressively smaller sizes than that of the first ridge but larger than that of the last ridge adjacently disposed in the sheathing layer on each side of the at least one first ridge and occupying the remainder of the circumference thereof between said first and second points in corresponding substantially uniformly decreasing order of sizes in accord with the progressive peripheral remoteness thereof from the at least one first ridge, the exposed surface of the sheathing layer peripherally providing a composite silhouette characterized by a longitudinally repetitive variation in surface roughness around the circumference of the sheathing layer in accord with the helical disposition of the differing size ridges, e.g. wires, therein, the sheathing layer preferably being formed of round wires of size and disposition corresponding to said ridges and having a composite cross-sectional shape corresponding substantially to that of an eccentric annulus.

3,624,277

TELEPHONE CONNECTOR RETAINING COVER

King B. Drake, Los Angeles, Calif., assignor to Dracon Industries, Chatsworth, Calif.

Continuation-in-part of application Ser. No. 834,111, June 17, 1969. This application Aug. 3, 1970, Ser. No. 60,501
Int. Cl. H01b *17/00;* **H05k** *5/03*
U.S. Cl. 174—138 F **16 Claims**



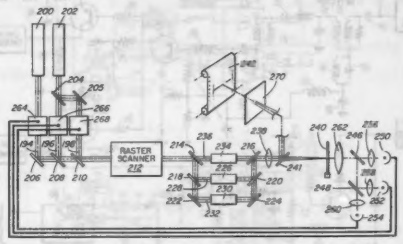
A telephone connector retaining cover with sides, ends and top. The cavity is of sufficient size to accept a telephone connector. The ends have openings for the cord and cable secured to the telephone connector. Interiorly, the cover has resilient retaining latches which snap onto the telephone connector assembly to retain it in the cover. The top carries indicia, including a molded-in partial outline of the telephone connector to indicate the proper position of the connector in the cover. The indicia include words indicating which end is the cord end. Furthermore, retention means is provided in the cover at its four corners to hold the cover in place. These retention means preferably are means for retaining magnets in place, which magnets retain the cover against metal desks or walls. Alternatively, the retention means engages a base which is secured to the wall by any conventional means.

3,624,278

AREA MULTIPLEX IMAGE RECORDING BY FLYING SPOT RASTER SCANNING EMPLOYING SPATIAL FILTERING

Helmut Heckscher, New Ton Center, Mass., assignor to Technical Operations, Incorporated, Burlington, Mass.

Filed Nov. 19, 1969, Ser. No. 877,931
Int. Cl. H04n *5/84*
U.S. Cl. 178—5.2 R **14 Claims**



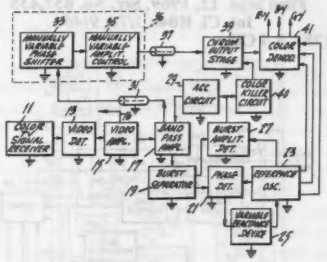
A plurality of images are stored on a common area of a recording medium by impressing the images respectively on spatial carriers having like spatial frequency but predetermined azimuthal separation. The images are selectively retrievable in a spatially coherent projection system. The disclosure stresses recording with one or more flying spot scanners the separate carrier-modulating images as rasters having said predetermined azimuthal separation.

3,624,279

COLOR TELEVISION RECEIVER HUE CONTROL

Edward W. Curtis, Indianapolis, Ind., assignor to RCA Corporation

Filed May 22, 1968, Ser. No. 730,993
Int. Cl. H04n *9/48*
U.S. Cl. 178—5.4 HE **2 Claims**



A manually variable phase shifter in the chrominance amplifier channel of a color television receiver at a point subsequent to burst takeoff permits viewer to adjust hue of reproduced color image without disturbing ACC circuit operation. A manually variable amplitude control in the same channel provides viewer control of saturation of reproduced colors. Association of both "customer" color controls with same receiver channel permits use of single pair of shielded cables to couple color controls to associated color circuitry.

3,624,280

TELEVISION AMPLIFIER CIRCUITS

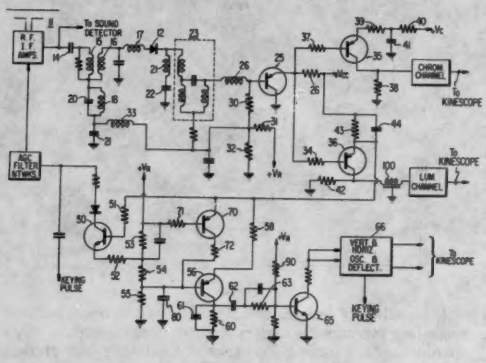
George E. Anderson, Indianapolis, Ind., assignor to RCA Corporation

Filed Aug. 25, 1969, Ser. No. 852,686
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.4 R **8 Claims**

Luminance and chrominance common emitter amplifiers are driven by an emitter follower stage having an input direct coupled to a video detector.
The common emitter stages serve to isolate the chrominance

signal components from the luminance components and permit the detector to operate relatively unloaded while being terminated in a primarily resistive impedance.

The chrominance amplifier includes substantially different magnitude impedances in the collector and emitter circuits to attenuate luminance signal components while amplifying



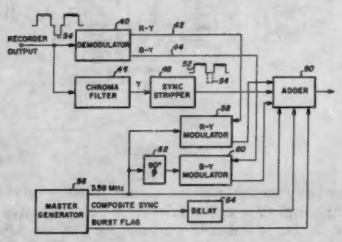
chrominance signals as applied to the chrominance channel. The luminance amplifier includes a collector load impedance for terminating a luminance delay line and an emitter impedance selected for peaking the luminance components, while further providing a low-impedance drive to sync and A.G.C. circuits included in the receiver.

3,624,281

VIDEO RECORDER PLAYBACK SYSTEM FOR PROVIDING PHASED COLOR TELEVISION SIGNALS

John T. Phan, Redwood City, Calif., assignor to Data Memory, Inc., Mountain View, Calif.

Filed Sept. 12, 1969, Ser. No. 857,435
Int. Cl. H04n 5/78, 9/46
U.S. Cl. 178—5.4 CD 8 Claims



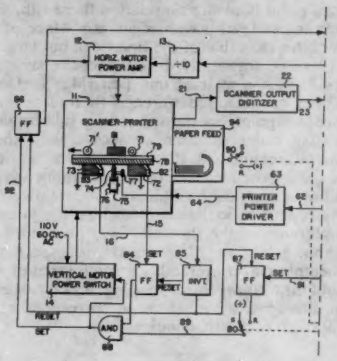
A video recorder playback system for producing a phased color television signal, comprising: a demodulator and a chroma filter responsive to the recorded signal and operative to respectively separate therefrom chrominance signals and a luminance signal having synchronization pulses; a sync stripper for stripping the synchronization pulses from the luminance signal to provide a stripped luminance signal; a signal generator for developing a subcarrier signal and synchronization pulses from a single source; a modulator responsive to the chrominance signals and subcarrier signals and operative to develop modulated chrominance signals; and a signal adder responsive to the modulated chrominance signals, the stripped luminance signal, and the new synchronization pulses, and operative to develop the phase color television signal.

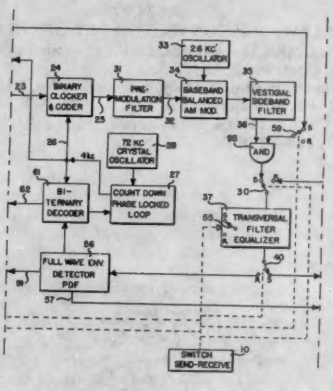
3,624,282

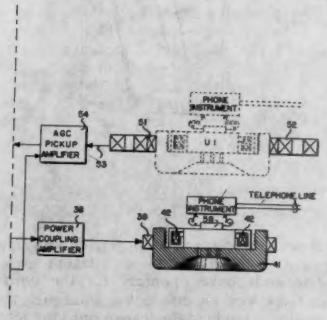
BINARY FACSIMILE SYSTEM

Roy G. Salaman, and John B. Picchiottino, both of Boulder, Colo., assignors to Phonocopy, Inc., Wilmington, Del.

Continuation of application Ser. No. 579,591, Sept. 15, 1966. This application July 28, 1970, Ser. No. 64,096
Int. Cl. H04n 7/00
U.S. Cl. 178—6 10 Claims







A binary-facsimile system which operates by converting the photoelectric analog scan signal to a binary signal the two levels of which represent the black and white data in the portions of the sheet being scanned. The binary signal is processed for partial response transmission and vestigal sideband amplitude modulated on a carrier for transmission in the switched telephone network to obtain increased rate of information transmissions for a given channel bandwidth. The receiver receives the binary signal and prints black or

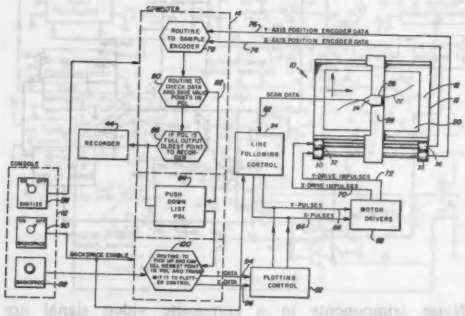
white data in accordance with the binary signal level to form a facsimile reproduction of the original sheet scanned.

3,624,283

METHOD AND MEANS FOR BACKSPACING A LINE FOLLOWER IN A DIGITIZING SYSTEM

David J. Logan, Glastonbury, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Apr. 29, 1970, Ser. No. 32,888
Int. Cl. H04n 7/02
U.S. Cl. 178—6.8 10 Claims



In a digitizing system, a line follower automatically follows a line or edge to be digitized and intermittently outputs data representing the coordinates of points spaced along the line. This coordinate information is supplied to a computer and, through the computer, to a recorder or other terminal device using such information. The computer memory temporarily stores, in a pushdown list, a plurality of the most recent sets of coordinate data supplied by the line follower. Should the line follower accidentally stray from the line being digitized, the operator, by appropriately conditioning the system, may cause the system to utilize the temporarily stored coordinate data to cause the line follower to be driven in a plotting or backspacing mode to retract its path of movement for return to a previously properly taken point on the line being digitized. Any erroneous coordinate data taken during the departure of the line follower from the line being digitized is erased or destroyed during the backspacing operation so that after the full digitizing operation is completed, the result is a clean record wherein the recorded data represents points located in succession along the digitized line without any "-switch-backs" or undesirably large gaps in such data.

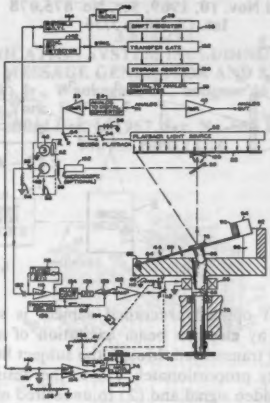
3,624,284

PHOTOGRAPHIC RECORD OF DIGITAL INFORMATION AND PLAYBACK SYSTEM INCLUDING OPTICAL SCANNER

James T. Russell, Richland, Wash., assignor to The Battelle Development Corporation, Columbus, Ohio

Original application Sept. 1, 1966, Ser. No. 576,580, now Patent No. 3,501,586. Divided and this application Sept. 12, 1969, Ser. No. 857,474
Int. Cl. G02f 2/00; G06k 7/016; G11b 7/00
U.S. Cl. 178—6.7 A 18 Claims

An electrical signal-recording and playback system is described in which an analog input signal is converted to a digital signal that pulses a light source to form a single, series-recorded track of binary coded digital information including information spots arranged in groups separated by synchronizing spots recorded on a photographic film which is played back in a similar manner. The photographic film is a compact, permanent record of long, useful lifetime which may be photographically copied to provide a plurality of inexpensive copies. A spiral track photographic record is used



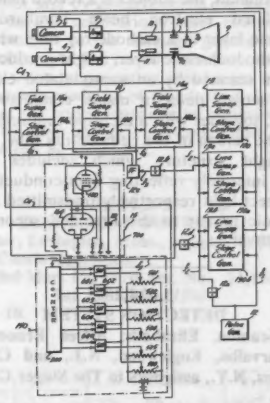
in one embodiment which can be employed to provide a music system of high quality.

3,624,285

HIGH-RESOLUTION TELEVISION SYSTEM

Hanns H. Wolff, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 16, 1968, Ser. No. 753,269
Int. Cl. H04n 5/30
U.S. Cl. 178—6.8 4 Claims

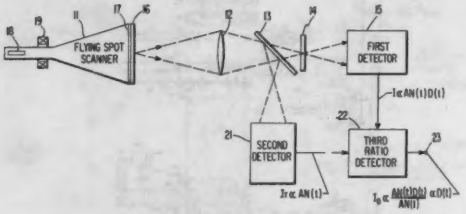


To increase resolution in a television system, a plurality of television cameras are positioned to view a common scene and to furnish video information to a common display tube which has a like plurality of electron gun systems and beam deflecting means to control each electron beam individually. Brightness is increased proportionately. Beam deflection voltages (or currents) in the display tube and in the cameras are synchronized but differ in amplitude and/or phase so that scanning lines associated with different cameras are interspaced on the display tube screen.

3,624,286
NOISE CANCELLATION IN VIDEO SIGNAL-GENERATING SYSTEMS

Douglas Robert Bosomworth, Hightstown, and Zoltan Joseph Kiss, BelleMead, both of N.J., assignors to RCA Corporation

Filed Nov. 10, 1969, Ser. No. 875,078
Int. Cl. H04n 5/36
U.S. Cl. 178—7.2 13 Claims

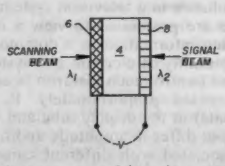


A transparent optically recorded subject is scanned by light produced by electron beam excitation of a phosphor screen, the light transmitted through the subject being modulated in intensity proportionately (1) to the desired subject representative video signal and (2) to undesired noise effects inadvertently produced by the phosphor screen excitation. The light derived from the phosphor screen and the subject is divided by a semireflecting mirror, which may be a dichroic device, and the light transmitted through the mirror and modulated proportionately to both the desired video signal and the undesired noise effects is directed to a first detector to produce a first signal representative of such light, while the light reflected by the mirror and modulated substantially only by the undesired noise effects is directed to a second detector to produce a second signal representative of the noise effects. The first and second signals are applied to a third detector which functions to determine the ratio of the first and second signals and to produce an output signal including substantially only the desired subject representative video signal. In one embodiment, the subject is a photographic transparency and the semireflecting mirror is located between the subject and a flying spot cathode-ray tube scanner. In another embodiment, the subject is a record made by a video signal modulated electron beam bombardment of a cathodochromic layer of a cathode-ray tube which also has, behind the cathodochromic layer, a light-producing phosphor layer which is scanned by an unmodulated electron beam, the first and second detector means comprising photomultipliers which, together with a dichroic semireflecting mirror and at least the screen of the cathode-ray tube, are enclosed in a light-tight structure which includes two hollow frustoconical internally reflecting light-conducting members located to direct light respectively transmitted and reflected by the dichroic mirror to the first and second photomultipliers respectively.

3,624,287
DETECTION SYSTEM

Joseph C. Scanlon, Elizabeth; Alfred Brauer, Wanaque; Robert Carvalho, Englewood, N.J., and Cecil B. Ellis, White Plains, N.Y., assignors to The Singer Company, New York, N.Y.

Filed Apr. 30, 1969, Ser. No. 820,572
Int. Cl. H04n 5/30; H01l 3/00
U.S. Cl. 178—7.2 3 Claims

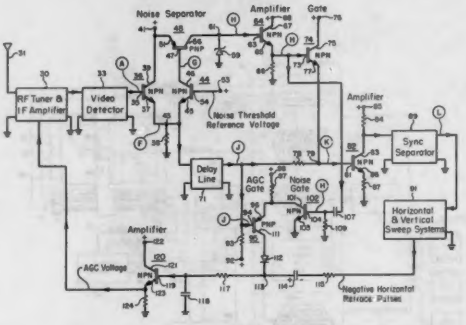


A signal detector comprising in combination a thin photosensitive element sandwiched between partially transparent electrodes; amplifier means connected to the detection element; and utilization means connected to the amplifier.

3,624,288
VIDEO SIGNAL NOISE ELIMINATION CIRCUIT

Judson A. Hofmann, Oak Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Nov. 5, 1969, Ser. No. 873,757
Int. Cl. H04n 3/16
U.S. Cl. 178—7.3 R 15 Claims

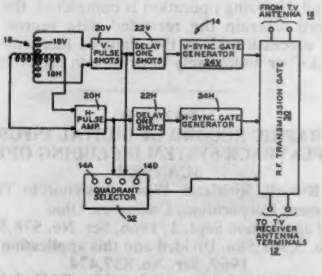


Noise components in a composite video signal are completely removed by modifying that signal with protection pulses each of which effectively anticipates and embraces an assigned respective one of the noise components. This is achieved by stretching the output pulses of a threshold-biased noise separator to form the protection pulses which are then combined with the composite video signal, but after it has been delayed in a delay network, to cancel the noise components. The sync components may then be separated from the noise-free video signal. A keyed automatic gain control system for the television receiver may also be noise gated by the protection pulses.

3,624,289
APPARATUS FOR BLANKING PORTION OF FIELDS OF TELEVISION VIDEO SIGNALS

Don J. Dudley, Brightwaters, N.Y., assignor to Data-Plex Systems, Inc., New York, N.Y.

Filed Aug. 26, 1970, Ser. No. 67,167
Int. Cl. H04n 5/46, 7/08
U.S. Cl. 178—7.3 E 6 Claims



Connected between the antenna and the antenna input terminals of a conventional television receiver is an R.F. gate which controllably passes television signals from the antenna to the receiver. The gate is controlled by selected blanking signals, to pass selected portions of the television fields. The gate also receives override signals to prevent the blocking of transmission during the occurrence of the raster synchronizing signals. The override signals are derived from the raster-driving signals generated in the receiver in response to the raster-synchronizing signals. Inductive pickup means posi-

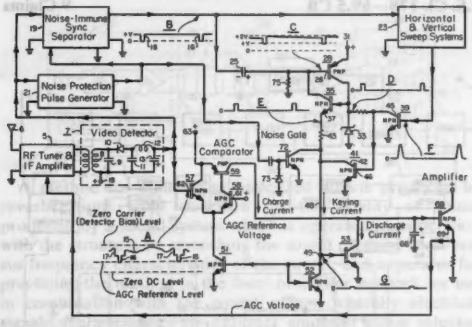
tioned outside the receiver in the vicinity of the receiver's deflection yoke radiatively receives the raster-driving signals which are then delayed to become the override signals.

3,624,290

TELEVISION RECEIVER AGC SYSTEM KEYED IN RESPONSE TO TIME COINCIDENCE OF SYNC AND FLYBACK PULSES

Judson A. Hofmann, Oak Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 30, 1969, Ser. No. 889,198
Int. Cl. H04n *5/56*
U.S. Cl. 178—7.3 DC **15 Claims**



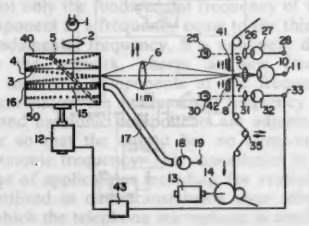
Under normal operating conditions a coincidence circuit produces keying pulses, for an AGC system of a television receiver, only when the flyback pulses from the receiver's horizontal sweep system occur concurrently with the horizontal sync components from the sync separator. The magnitude of the developed AGC voltage is held constant between keying pulses. This arrangement precludes sampling of video information, with a resulting false measure of received signal strength and an erroneous magnitude for the AGC voltage, which takes place in a conventional flyback pulse-keyed AGC system when the horizontal oscillator is out of synchronism with the sync pulses. During transient conditions, when there is a very fast and substantial increase or decrease in received signal strength causing a loss of sync pulses at the separator output, keying is achieved in the disclosed AGC system in response to the flyback pulses alone.

3,624,291

OPTICALLY INTERLACED SCANNING AND REPRODUCING APPARATUS USING MULTIPLE DRUMS TO PERMIT SCANNING OF MOTION PICTURE FILM OR STATIONARY FILM

Shoichi Miyata, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Dec. 29, 1969, Ser. No. 888,283
Claims priority, application Japan, Dec. 28, 1968, May 14, 1969; 43/96293, 44/36708
Int. Cl. H04n *3/04*
U.S. Cl. 178—7.6 **7 Claims**



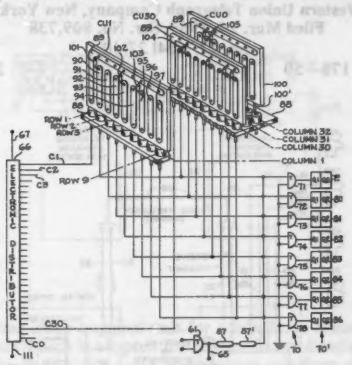
This apparatus uses one or more drums each having a number of small holes or convex lenses for converting a light ray emitted from a light source into light spots each having a small diameter. The light spots are projected onto a scanning raster region through which moves a picture film. A light passed through the film is converted into an electrical signal adapted to be supplied to a conventional television receiver.

3,624,292

COMMUNICATION SYSTEM INCLUDING AN ANSWER-BACK MESSAGE GENERATOR AND KEYBOARD

John Guzak, Jr., Waukegan, Ill., assignor to SCM Corporation, New York, N.Y.

Filed Dec. 6, 1967, Ser. No. 688,523
Int. Cl. H04l *13/16*
U.S. Cl. 178—17.5 **8 Claims**



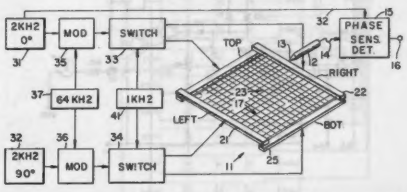
A communication system with a calling station and a called station interconnected by a communications channel, with an answer back message generator and a keyboard at the called station. The operation of the answer back message generator can be initiated by an inquiry signal from the calling station. The message generator includes an electronic distributor and individual successive coded units which provide network circuit links for network circuits formed in part by the electronic distributor and by gating circuits for memory devices. The memory devices and various other components of the system are common to the message generator and to the keyboard machine. As the coded units are modular in construction, the message generator can be set up initially to generate a message made up of any desired signals, and yet, one or more of the coded units can be individually removed and replaced by other and different coded units so that a different message can be generated.

3,624,293

ELECTRICAL INSCRIBING

Larry K. Baxter, Lexington, Mass., assignor to Shintron Company, Inc., Cambridge, Mass.

Filed Mar. 19, 1970, Ser. No. 21,156
Int. Cl. G08c *21/00*
U.S. Cl. 178—18 **7 Claims**



An electrical inscribing system comprises a set of parallel resistance wires orthogonal to and insulatedly separated from another set of parallel resistance wires. The X set of wires is connected between left and right conducting strips. The Y

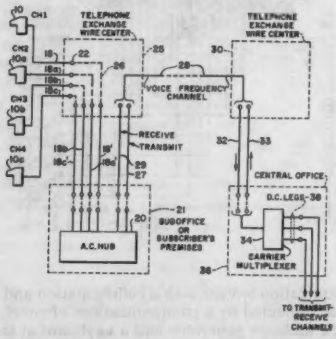
set of wires is connected between top and bottom conducting strips. Signals in time quadrature are applied between the top and bottom strips and then to the left and right strips. The X set and Y set of wires are separated by a ½-mil plastic insulating film. A ¼-inch sheet of plexiglass covers the upper set and may function as a writing surface. An electronic pen may be moved along the plexiglass and is AC coupled to the grid of resistance wires to provide an output signal from its self-contained preamplifier that is representative of the X and Y coordinates of the penpoint.

3,624,294

DISTRIBUTED MULTIPLEXING OF LOW-SPEED TELEGRAPH SUBSCRIBER LINES

John E. Cox, West Milford Township, Passaic County, and Earl D. Anderson, Jr., Oakland, both of N.J., assignors to The Western Union Telegraph Company, New York, N.Y.

Filed Mar. 24, 1969, Ser. No. 809,738
Int. Cl. H04l 27/10
U.S. Cl. 178—50 **2 Claims**



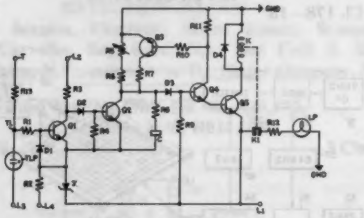
In a telegraph distribution system, a plurality of subscribers share a single voice-frequency channel on a multiplexed basis. Voice-frequency shift carrier modules are employed at each subscriber outstation. An AC mixing hub at a distribution point combines subscribers' data output on a single voice-frequency channel between the distribution point and a central office.

3,624,295

MONITORING MEANS FOR TELEGRAPH-TYPE DATA-COMMUNICATIONS SYSTEMS

Carl Norman Pederson, Westmont, Ill., assignor to The Pioneer Electric & Research Corporation, Forest Park, Ill.

Filed Nov. 26, 1968, Ser. No. 778,973
Int. Cl. H04l 25/02
U.S. Cl. 178—69 G **9 Claims**



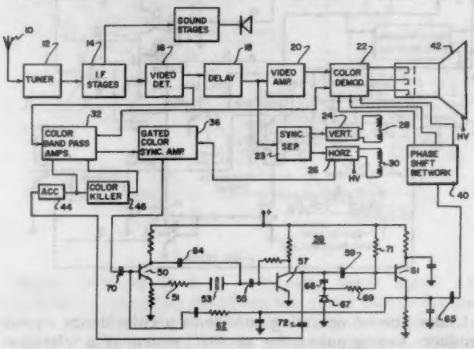
In a telegraph-type data-communications system in which a plurality of data sending stations are polled sequentially by a master controller to transmit data, a monitor in the test room of the system supervises the activity of the controller. An absence of polling signals for a predetermined time is detected and reported visually and/or audibly via remote and local alarm means, as desired. The monitoring circuit is transistorized and functions with a sudden switching action at a stable operating point with relatively inexpensive components, notwithstanding the relatively long time constant (slow rate) of its timer.

3,624,296

BURST-CONTROLLED OSCILLATOR CIRCUIT

William H. Slavik, Oak Lawn, Ill., and Carl E. Snyder, Mountain View, Calif., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 23, 1969, Ser. No. 860,216
Int. Cl. H04n 9/46
U.S. Cl. 178—69.5 CB **9 Claims**



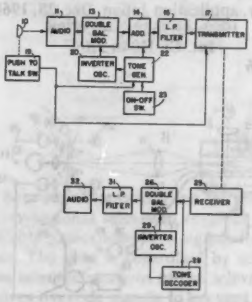
A multistage, crystal-controlled oscillator circuit for a color television receiver provides, from an intermediate stage, a control signal indicative of the presence or absence of burst components in the received signal, with this control signal being utilized to provide ACC and color killer controls for the color television receiver. A feed-forward circuit is provided for the final stage of the oscillator, so that the output signal level obtained from the final stage remains constant, and a provision is made for providing noise immunity of the circuit during both the presence and absence of received burst signal conditions.

3,624,297

TONE-CONTROLLED SPEECH SCRAMBLER

Ronald H. Chapman, Wheaton, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 21, 1969, Ser. No. 817,696
Int. Cl. H04m 1/70, 3/16
U.S. Cl. 179—1.5 **8 Claims**



A speech-coding or scrambling system which operates by changing a speech signal by means of an inverter signal, also

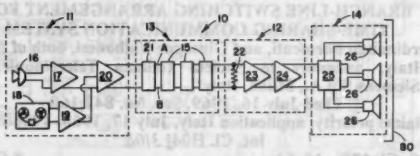
incorporates a tone signal outside of the speech frequency band to inform the receiver that the speech is being coded. Upon the receipt of the tone signal the receiver automatically operates to decode the received signal.

3,624,298

SOUND-IMPROVING MEANS AND METHOD

Arthur C. Davis, Newport Beach; Donald B. Davis, Tustin, and James J. Noble, Santa Ana, all of Calif., assignors to LTV Ling Altec, Inc., Anaheim, Calif.

Filed Mar. 5, 1969, Ser. No. 804,573
Int. Cl. H03j 5/24
U.S. Cl. 179—1 D 18 Claims



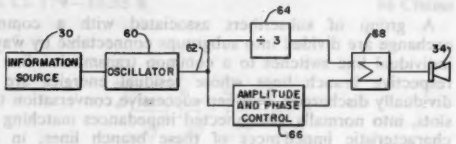
A method for eliminating undesired effects produced by reverberations from structure on the quality of sound produced by a sound system which is operated in association with the structure by smoothing the sound pressure-level versus frequency characteristics of the sound; and apparatus for practicing the method in the form of a filter network for use in combination with the sound system whereby electrical signals are attenuated by different amounts within selected ones of discrete bands of audiofrequencies to shape the sound pressure-level versus frequency characteristic of the sound.

3,624,299

APPARATUS AND METHOD

Reuven Meidan, Stony Brook, N.Y., assignor to Applied Digital Data Systems, Inc.

Filed Nov. 13, 1969, Ser. No. 876,393
Int. Cl. H04m 11/06
U.S. Cl. 179—1 C 9 Claims



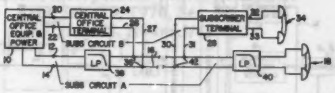
A method of and an apparatus for cancelling second harmonics in electrical signals resulting from nonlinear devices within electrical networks. The signal applied to the network includes not only the fundamental frequency of interest, but also a component at a frequency equal to the third harmonic of that fundamental frequency. If a nonlinear device is included in the network, energy at new frequencies is generated including components at the frequency of the second harmonic of the fundamental frequency of interest. These second harmonic components are adjusted to cancel each other so that the output has no component at that second harmonic frequency. This cancellation is usable in a broad range of applications including, for example, acoustic couplers utilized in data transmission over telephone networks in which the telephone microphone is nonlinear, causing second harmonics of the transmitted signal which if uncancelled would interfere with received signals during full-duplex operation.

3,624,300

CENTRAL OFFICE TERMINAL UNIT FOR TELEPHONE CARRIER SYSTEM

Lester Q. Krasin, Dallas, and Clifford E. Greene, Forth Worth, both of Tex., assignors to Superior Continental Corporation, Hickory, N.C.

Original application Aug. 2, 1967, Ser. No. 660,165, now Patent No. 3,510,584, which is a continuation-in-part of application Ser. No. 549,399, May 11, 1966, now abandoned. Divided and this application Dec. 22, 1969, Ser. No. 887,287
Int. Cl. H04h 1/08
U.S. Cl. 179—2.5 5 Claims



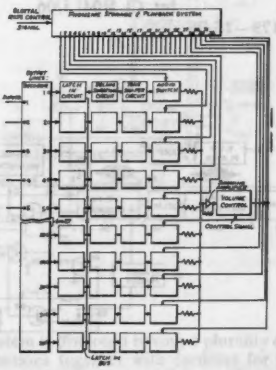
A central office terminal unit for a telephone communication system which is adapted for connection to central office power supply and to a cable transmission pair from the central office as part of a system that supplies an additional subscriber facility without affecting the original facility. The central office terminal has receiver and transmitter sections for deriving from and supplying to the transmission pair an amplitude-modulated carrier signal and utilizes a power regulation and control means for regulating the voltage from the central office power supply to a predetermined level and supplying it to said receiver and transmitter sections.

3,624,301

SPEECH SYNTHESIZER UTILIZING STORED PHONEMES

William E. Richeson, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Continuation of application Ser. No. 586,521, Oct. 13, 1966. This application Apr. 15, 1970, Ser. No. 24,360
Int. Cl. G10l 1/00
U.S. Cl. 179—15 A 4 Claims



A system for synthesizing sounds is disclosed which has a plurality of phonemes recorded for example one phoneme

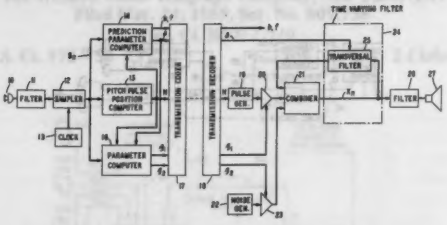
per track in each of several tracks of a recording medium. A plurality of latch circuits interconnected so that only one of the latch circuits may be energized at any given time are effective to gate out of the storage medium a prescribed phoneme in response to a digital code input specifying that phoneme. A plurality of phonemes are then concatenated to form intelligible sounds.

3,624,302

SPEECH ANALYSIS AND SYNTHESIS BY THE USE OF THE LINEAR PREDICTION OF A SPEECH WAVE

Bishnu S. Atal, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 29, 1969, Ser. No. 872,051
Int. Cl. G10l 1/00
U.S. Cl. 179—1 SA **10 Claims**



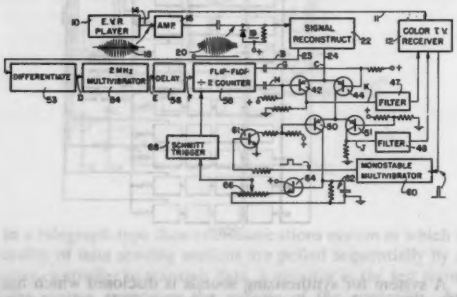
A short-time spectral analysis of a nonstationary signal, such as a speech signal, does not ordinarily yield control signal information sufficient for subsequent synthesis. However, more reliable control signals for a speech synthesizer can be obtained by making use of natural constraints, applicable to a speech wave, in the analysis procedure. For frequencies below 5 kHz., the human vocal tract can be modeled as an acoustic tube in which only plane waves propagate. Thus, for vowels and vowellike sounds, the speech output of the vocal tract at any instant of time can be assumed to be a weighted sum of its past values and the input to the vocal tract at that instant of time. In the described invention, a speech wave is represented by the output of a linear filter which simulates an acoustic tube and which is excited by a combination of a quasi-periodic pulse train and white noise. The parameters of this filter are derived from the speech wave such that the mean-squared error between the synthetic speech samples at the output of the filter and the input speech samples is minimum.

3,624,303

SIGNAL-DEMODULATING PHASE CONTROL SYSTEM

Francis H. Hilbert, River Grove, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 9, 1970, Ser. No. 17,597
Int. Cl. H04j 3/06
U.S. Cl. 179—15 BS **7 Claims**



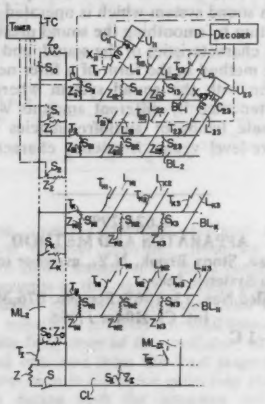
Pulse-width modulated, time-division multiplexed pulses are used to convey two channels of color information in an electronic video-recording (EVR) system, with the color information being recovered by a demodulator gate switched in synchronism with the information signal train to alternately pass the information pulses to different outputs of the gate. At predetermined intervals, the modulation of the pulse widths of the two channels is in the form of maximum width modulation in one channel alternating with no information in the other channel; the pattern being repeated a predetermined number of times. A detecting circuit coupled to an output of the demodulator gate responds to the presence of this sequence in improper phase and corrects the phase of operation of the demodulator gate if the sequence is being demodulated in the wrong phase.

3,624,304

BRANCH-LINE SWITCHING ARRANGEMENT FOR TIME-SHARING COMMUNICATION SYSTEM

Ferdinando Formenti, and Giuseppe Valbonesi, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed July 16, 1969, Ser. No. 842,160
Claims priority, application Italy, July 17, 1968, 19066 A/68
Int. Cl. H04j 3/08
U.S. Cl. 179—15 AA **8 Claims**



A group of subscribers associated with a common exchange are divided into subgroups connectable by way in individual line switches to a common transmission line via respective branch lines whose residual energies are individually discharged, between successive conversation time slots, into normally disconnected impedances matching the characteristic impedances of these branch lines; in like manner, and at the same time, the common transmission line is also discharged into a normally disconnected matching impedance.

3,624,305

COMMUNICATION SWITCHING NETWORK HOLD AND EXTRA CONTROL CONDUCTOR USAGE

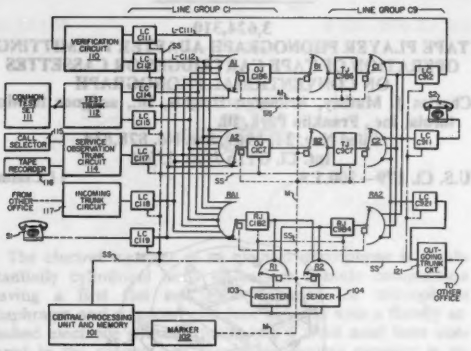
George Verbaas, Brockville, Ontario, Canada, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed July 13, 1970, Ser. No. 54,138
Int. Cl. H04q 3/42; H04m 3/22
U.S. Cl. 179—18 E **13 Claims**

A common control switching system with a network having a main section for line to line and trunk connections and an auxiliary portion for register and sender connections. The terminal stage of the network has a multiple to both the originating and terminating sides of the main portion and to the auxiliary portion. For outgoing calls the connections are set up with the calling line having a double connection to the register and to the originating side of the main network, and the trunk circuit is set up with a double connection to the sender and to the terminating side of the network. In the auxiliary portion, diodes are provided in the hold conductor at

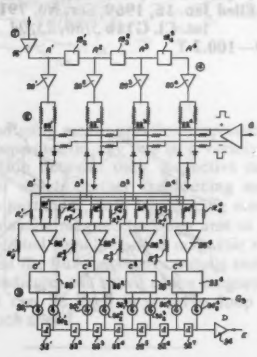
the inlet side of each 1XN switch to permit the register and sender connections to be initially held by ground potential from the register and sender circuits respectively and subsequently released, while ground on the hold conductor in the main portion of the network holds that connection.

The terminating junctors in the main portion of the network provide for call supervision for a local mode with a transmission bridge, and a trunk mode and a test mode with metallic



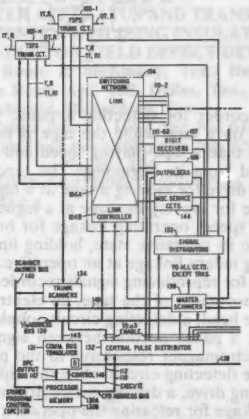
switch through. The test mode operates a test-call relay for splitting the hold conductor between the originating and terminating parts of the network, and an extra control conductor through the originating section is connected via make contacts of the test-call relay and the hold conductor of the terminating section to the cutoff relay of a line circuit, to thereby permit making a busy test for test and verification calls, and also to control the cutoff relay for tests from a common test set.

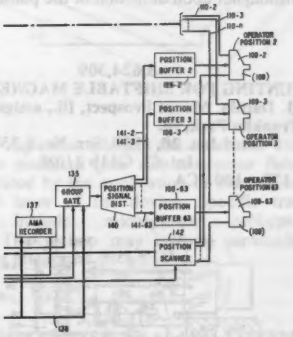
3,624,306
METHOD AND SYSTEM FOR COMPRESSING BANDWIDTH
George H. Myers, 190 Wyoming Ave., Maplewood, N.J.
Continuation-in-part of application Ser. No. 800,872, Feb. 20, 1969, now abandoned. This application Jan. 21, 1971, Ser. No. 108,286
Int. Cl. H04b 1/66
U.S. Cl. 179—15.55 R **16 Claims**



A method and system for compressing required bandwidth for signals possessing redundancy, without substantial loss of intelligence or signal-to-noise ratio. This is effected by sampling the input signal to yield an appropriate first group of samples, transforming the said group into a second group of samples displaying reduced power but yet retaining intelligence and signal-to-noise ratio, and then operating upon the transformed sample group to recover original power levels—and in the process reducing required bandwidth. A system is disclosed wherein these operations are effected by applying the input signal to a tapped delay line—the outputs from said line comprising the aforesaid first group of samples. Such outputs are each applied through weighting networks to derive the transformed, low-power, second sample group. After being passed through analog-to-digital converters, the low-power samples, then in parallel binary form, are gated and passed through a suitable delay line to effectively combine the low-power samples into higher power signals of number per unit time reduced in comparison to the original sampling rate.

3,624,307
CALL TRANSFER SYSTEM
Michael Frank Sikorsky, Neptune City, and Herman Ewald Voigt, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 13, 1970, Ser. No. 2,578
Int. Cl. H04m 3/42, 3/58
U.S. Cl. 179—27 FF **31 Claims**



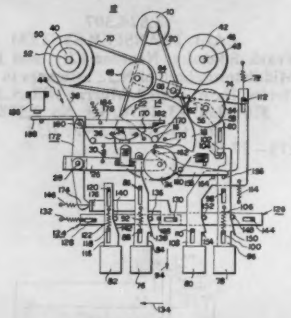


A telephone system is disclosed having a plurality of operator assistance positions together with facilities for transferring calls in a hold state between positions. These facilities are effective to transfer both the speech circuitry for the call as well as a lamp display of call status information to the new position.

3,624,308
TAPE RECORDER WITH AUTOMATIC RELEASE FROM FAST SPEED BY SENSING PAUSES BETWEEN RECORDED MATERIAL

Isao Kozu, and Yukitada Ayukawa, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 30, 1970, Ser. No. 23,682
Claims priority, application Japan, Apr. 16, 1969, 44/30862; Apr. 16, 1969, 44/30863; Apr. 16, 1969, 44/30864; Apr. 16, 1969, 44/30865
Int. Cl. G11b 27/22, 27/28, 15/44
U.S. Cl. 179—100.1VC 10 Claims

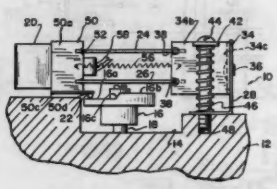


A tape recorder for detecting a pause portion between signal bands on a tape while the tape is being moved at a higher speed than a tape-playing speed and for playing back a signal band from its beginning. The tape recorder has a tape-moving drive for moving a tape at a tape-playing speed, winding drive for moving the tape at a higher speed than the tape-playing speed, operating linkage for bringing the winding drive into its operative state, holding linkage for holding the operating means linkage at an operative position, a transducing head for reproducing signals recorded on the tape according to movement of the tape, an electric amplifier connected to the head, a detecting circuit coupled to the amplifier to detect a pause portion between signal bands on the tape, an electromagnet responsive to the pause portion detected by the detecting circuit while the tape is being moved by the winding drive, a driving device driven by a motor, and releasing linkage for releasing the operating linkage from the holding linkage upon engagement of the driving device with the releasing linkage so that the winding drive is brought into its inoperative state when the releasing linkage is actuated by the electromagnet upon detection of the pause portion on the tape.

3,624,309
MOUNTING FOR SHIFTABLE MAGNETIC HEAD

Donald J. Dattilo, Mount Prospect, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 28, 1970, Ser. No. 6,338
Int. Cl. G11b 21/08
U.S. Cl. 179—100.2CA 6 Claims

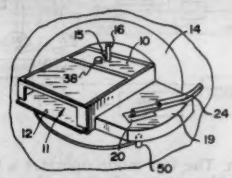


A mounting for supporting a magnetic tape head which is movable between different tracks on a multitrack magnetic tape. The mounting includes parallel spaced-apart plates formed of a sheet metal stampings. The plates have struck-out portions at their ends to form extension tabs which engage with notched members, one of which is pivotally secured to a standard and the other of which is secured to the magnetic tape head. Each of the notched members is also of a sheet metal stamping with portions thereof bent to the desired configuration. The linkage formed by the plates and the notched members maintains the face of the magnetic tape head substantially parallel to the plane of the magnetic tape engaged therewith in all positions of the head, and prevents torsional rotation thereof while the head is being moved from one position to another position.

3,624,310
TAPE PLAYER PHONOGRAPH ADAPTER PERMITTING OPERATION OF TAPE CARTRIDGES OR CASSETTES ON CONVENTIONAL PHONOGRAPH

Charles J. Mathey, Arlington Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 21, 1969, Ser. No. 878,834
Int. Cl. G11b 1/00, 23/04
U.S. Cl. 179—100.1 A 11 Claims

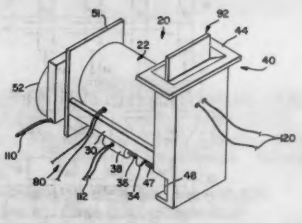


An adapter for enabling the playing of tape cartridges or tape cassettes on a conventional phonograph record player is driven by the turntable of the phonograph record player and fits over the spindle of the record player, with power for driving the capstan used to advance the tape being obtained from rotation of a driven turntable in the adapter. The coupling to the phonograph amplifier is accomplished by driving an inverted phonograph cartridge which is linked mechanically to the existing phonograph cartridge in the record player.

3,624,311
CARD HANDLER HAVING ROTATABLE MAGNETIC HEAD AND CARD-CLAMPING MEANS CARRIED BY HOUSING ASSEMBLY

Bernard M. Van Emden, Los Angeles, Calif., assignor to Advance Data Systems Corporation, Beverly Hills, Calif.

Filed Jan. 16, 1969, Ser. No. 791,680
Int. Cl. G11b 5/80, 25/04
U.S. Cl. 179—100.2 T 12 Claims



A card handler for reading information from, and writing information onto, a card or credential. The handler includes a housing assembly in which magnetic read/write heads are rotatably mounted; a card holder assembly; pressure pads carried by the housing assembly so as to encompass the path of rotary motion of the magnetic heads; and means for moving the housing assembly and the pressure pads so as to clamp the card between the pads and the card holder assembly, with the heads in operative proximity to the card.

3,624,312

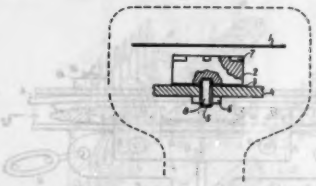
ELECTRET MICROPHONE

Vlastimil Koukal, and Otokar Krakora, both of Hradec Kralove, Czechoslovakia, assignors to Tesla, narodni podnik, Prague, Czechoslovakia

Continuation-in-part of application Ser. No. 495,452, Oct. 13, 1965, now Patent No. 3,474,197, dated Oct. 21, 1969. This application Aug. 4, 1969, Ser. No. 847,379

Int. Cl. H04r *19/04, 23/00*

U.S. Cl. 179—111 E 2 Claims



The electret member of an electret microphone is a substantially cylindrical body of barium titanate composition having a first flat end face opposite the microphone diaphragm and a second end face covered with a fixedly attached electrode which extends into a blind axial bore centered in the second end face. The electret member is attached to a supporting plate by a bolt soldered to the electrode in the bore and fastened to the support plate by a nut. The bolt provides the conductive lead for the electret.

3,624,313

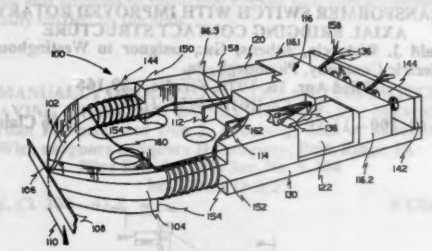
COMBINED INDUCTIVE AND FLUX-RESPONSIVE TRANSDUCER

Heinz A. DeKoster, Stamford, Conn., assignor to Seggos Industries, Incorporated, Stamford, Conn.

Filed June 16, 1969, Ser. No. 833,474

Int. Cl. G11b *5/30, 15/46*

U.S. Cl. 179—100.2CH 4 Claims



Inductive transducing means and flux-responsive transducing means are connected in any one of a variety of ways so that the relationship between their respective outputs provides information which neither transducing means alone could provide. In particular, both transducing means may be incorporated in a single magnetic sensing unit so as to sense the same or correlated signals upon a magnetic record. The difference between the flux-responsive output and the inductive output then indicates the speed of the magnetic information carrier, and can be used in a servo loop to control and/or indicate such speed.

3,624,314

COMPLEMENTARY SYMMETRY AMPLIFIER WITH FIELD-EFFECT TRANSISTOR DRIVER

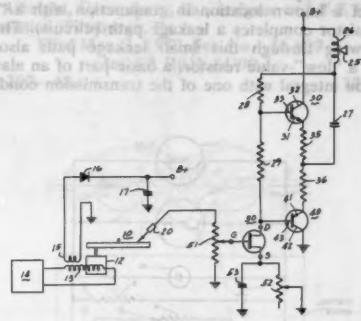
Earl L. Mantor, Chicago, Ill., assignor to Admiral Corporation, Chicago, Ill.

Filed Apr. 6, 1970, Ser. No. 25,640

Int. Cl. G11b *3/00;* H04m *1/60;* H03f *3/16*

U.S. Cl. 179—100.4 A 7 Claims

An amplifier with a pair of complementary symmetry connected output transistors driven by an N-channel field-effect



transistor whose load includes the bias resistor for the output transistors.

3,624,315

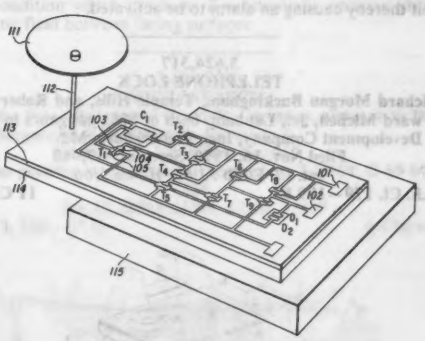
TRANSDUCER APPARATUS AND TRANSDUCER AMPLIFIER SYSTEM UTILIZING INSULATED GATE SEMICONDUCTOR FIELD EFFECT DEVICES

Max E. Broce, Route 2, McKinney, Tex.; Derek Colman, 14020 Maham Road, Apt. 138, Dallas, Tex., and Jack P. Mize, 918 Beechwood, Richardson, Tex.

Original application Jan. 23, 1967, Ser. No. 610,991, now abandoned. Divided and this application July 15, 1969, Ser. No. 862,106

Int. Cl. G11b *3/00;* H04r *23/00;* H04m *1/60*

U.S. Cl. 179—100.4 A 11 Claims



A transducer apparatus wherein the source to drain conductance of an insulated gate semiconductor field effect device is modulated by the application of mechanical stress to the channel layer of the device. Specific transducer modifications include microphone pickups and phonopickups. The pickup may include preamplifiers in either discrete or integrated circuit form.

3,624,316

SUBSCRIBER PRESSURE ALARM SYSTEM

Walter L. Roberts, Hickory, N.C., assignor to Superior Continental Corporation, Hickory, N.C.

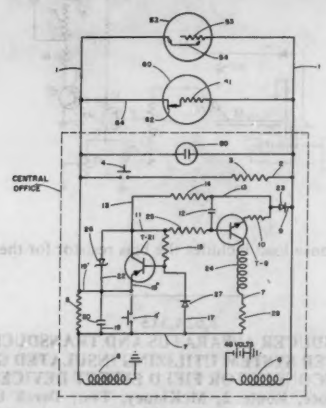
Filed Apr. 11, 1969, Ser. No. 815,321

Int. Cl. H04b *3/46*

U.S. Cl. 179—175.3 28 Claims

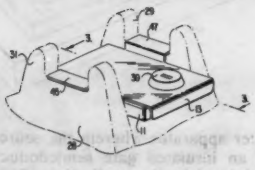
Disclosed herein is a fail-safe pressure alarm system, virtually transparent to a telephone subscriber circuit, adapted for use with telephone transmission pairs (electrical conductors) within a pressurized system and employed to detect not only a change in value of a predetermined ambient condition

(pressure), but also to indicate the approximate location in the pressurized system where the pressure change has taken place. Normally closed contacts of a pressure-sensitive device of a known location in conjunction with a "high"-value resistor completes a leakage path (circuit). That current flowing through this small leakage path also flows through a "low"-value resistor, a basic part of an alarm circuit made integral with one of the transmission conductors.



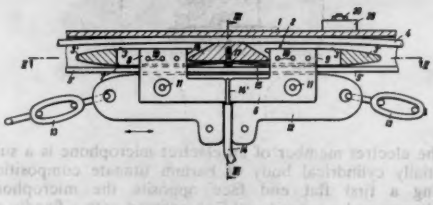
A resulting voltage drop across this last mentioned resistor is used to reverse bias a transistor in the alarm circuit thereby keeping an alarm from sounding. Any system pressure loss causes contactors of the pressure-sensitive device to open, thereby removing the leakage path ("high"-value resistor) from the alarm circuitry. This causes the transistor to become conductive, allowing current to flow through a circuit thereby causing an alarm to be activated.

3,624,317
TELEPHONE LOCK
Richard Morgan Buckingham, Temple Hills, and Robert Edward Michell, Jr., Lanham, both of Md., assignors to Mico Development Company, Inc., Bladensburg, Md.
Filed Nov. 16, 1970, Ser. No. 89,940
Int. Cl. E05b *73/00*; H04m *1/66*
U.S. Cl. 179—189 R **11 Claims**



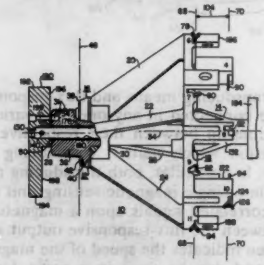
A device for locking a telephone to prevent the unauthorized use thereof is described. The device comprises a baseplate that clamps to the web located between the handset cradles of a convention desk-style telephone base. In one form, a locking plate having a pair of outwardly extending wings is used in combination with the baseplate. The wings extend outwardly to cover the switch pins located in the handset cradles. The locking plate supports a cylinder lock, the cylinder of which passes through an aperture in the baseplate. Located on the lower end of the cylinder lock is a cam. When the cylinder lock is rotated, the cam engages the lower surface of the baseplate and locks the locking plate against vertical movement. This action prevents the switch pins from raising upwardly. In a second form, the locking plate hooks under the lower front corner of the telephone and covers the pushbuttons or dial to prevent access thereto. The other end of this locking plate also includes a cylinder lock and cam that engages the baseplate to prevent the removal thereof.

3,624,318
CURRENT SUPPLY ARRANGEMENTS FOR MOBILE LOAD DEVICES
Karl Rekers, 4441 Spelle Kreis Lingen, Germany
Filed Dec. 16, 1968, Ser. No. 783,787
Claims priority, application Germany, Dec. 27, 1967, P 16 15 547.8
Int. Cl. B60m *1/34*
U.S. Cl. 191—23 A **30 Claims**



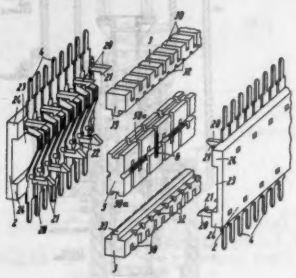
A current supply arrangement for a mobile load device consists of an elongate, flexible, stringlike member of hollow-sectioned profile forming a collection line duct accommodating a flexible conductor of corresponding length and forming a single current supply pole, and a current pickup device comprising a slide carried by the collector line duct and guided in a slot therein, the slide being connected with the load device for traction thereby. A plurality of these single current supply poles are strung in side-by-side parallel relation along a required route to form a multipole current supply unit.

3,624,319
TRANSFORMER SWITCH WITH IMPROVED ROTARY AXIAL BRIDGING CONTACT STRUCTURE
Donald J. Ristuccia, Athens, Ga., assignor to Westinghouse Electric Company, Pittsburgh, Pa.
Filed Apr. 16, 1970, Ser. No. 29,166
Int. Cl. H01h *19/58*, *1/20*
U.S. Cl. 200—11 TC **16 Claims**



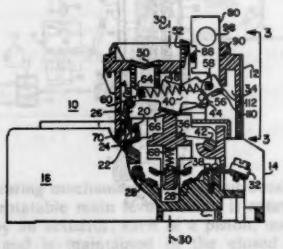
A switch adapted to be disposed within the casing of an electrical distribution transformer, which may be connected as a series-multiple switch, or as a tap changing switch. The switch includes a stator portion having a contact deck with a plurality of stationary contacts arranged in two spaced planes, and a rotor portion having electrically connected contacts disposed to engage stationary contacts in both planes.

3,624,320
SLIDE SWITCH
Bruno Eberhart, Rossmarktstr. 27, 8740 Bad Neustadt, Saale; Wolf-Erhard Steigerwald, Haus-Nr. 31 1/6, 8741 Leutershausen, and Wilhelm Hartmeyer, Hedwig-Fichtel-Str. 18, 8740 Bad Neustadt, Saale, all of Germany
Filed Dec. 9, 1969, Ser. No. 883,472
Claims priority, application Germany, Dec. 18, 1968, P 18 15 299.9
Int. Cl. H01h 15/00
U.S. Cl. 200—16 R 13 Claims



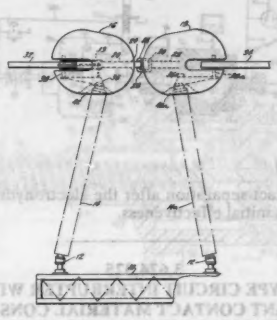
In a slide switch: a housing defining chamber; a slide movably supported by said housing within said chamber and fixedly carrying contact elements; said housing being composed of two pairs of elements, a first pair and a second pair; the elements of each one pair being identical but different from those of the other pair; the elements of the second pair being arranged between the marginal portions of said elements of the first pair; said elements of the first pair having inwardly projecting spring arms provided with surfaces engaging mating surfaces of said elements of the other pair and holding said elements of both pairs together as a rigid unit; elongated contacts supported on said marginal portions of the elements of the first pair and each having a resilient middle portion bridging the space between said marginal portions and adapted to resiliently engage said contact elements fixedly carried by the slide.

3,624,321
MANUALLY OPERATED TOGGLE ACTING SWITCH HAVING A PADLOCK RECEIVING LOCKING MEMBER
Jordan F. Puetz, and Don J. Arneberg, both of Milwaukee, Wis., assignors to Square D Company, Park Ridge, Ill.
Filed Feb. 6, 1970, Ser. No. 9,204
Int. Cl. H01h 9/28
U.S. Cl. 200—42 T 5 Claims



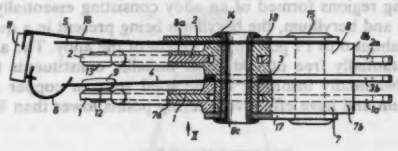
A manually operated switch having a toggle lever actuating mechanism and a locking member which will prevent actuation of the switch when the member is held in a locking position by a padlock. The locking member is arranged to move the toggle levers and a start button of the switch to an OFF operating position when the locking member is moved to the locking position and to be moved to an inoperative position when the start button and the toggle levers are moved to the ON operating position.

3,624,322
ISOLATING SWITCH FOR A HIGH-POWER ELECTRICAL DISTRIBUTION SYSTEM
Roy H. Albright, Greensburg, Pa., assignor to I-T-E Imperial Corporation, Pittsburgh, Pa.
Filed Mar. 3, 1970, Ser. No. 16,029
Int. Cl. H01h 31/00
U.S. Cl. 200—48 10 Claims



The isolating switch employs semispherical-type electrode shielding energized parts which are mounted on the top of a pair of tilted insulator columns. The columns are mounted to a support frame by means of rotor bearings, which, when rotated by an appropriate mechanism, cause the tops of the insulator columns to move in a circular path. Linkages are employed and are responsive to column rotation in a first direction to electrically contact the blade and jaw of the switch arrangement, and to withdraw the blade and jaw in response to column rotation in a second direction to break contact. The smooth surfaces of the electrodes employed face one another in this second instance and provide an open gap condition which produces a substantially uniform electrostatic field between facing surfaces.

3,624,323
MICROSWITCH
Wilhelm Peter Borgmann, Overath, Germany, assignor to W. P. Borgmann, K.G., Overath, Germany
Filed Jan. 5, 1970, Ser. No. 657
Claims priority, application Germany, Jan. 7, 1969, G 69 00 334
Int. Cl. H01h 21/44, 37/52, 37/60
U.S. Cl. 200—67 D 6 Claims

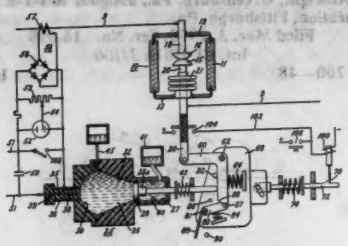


A microswitch with a flexible lamella is retained between individual contact lamellas which are cast in insulating material. The operating lamella is switchable by movement of an actuating lamella which in turn moves a scroll-spring to switch the operating lamella.

3,624,324
CIRCUIT BREAKER ACTUATED BY EXTRA-HIGH SPEED ELECTROHYDRAULICALLY OPERATED PISTON
Philip Barkan, Media, Pa., and Edward C. Schrom, Latham, N.Y., assignors to General Electric Company
Filed Nov. 4, 1969, Ser. No. 873,938
Int. Cl. H01h 3/24, 35/38, 33/66
U.S. Cl. 200—82 R 8 Claims

Discloses an extra-high speed circuit breaker in which the force for initial contact-separation is supplied by an elec-

trohydraulic shock wave generator. A follow-up operator is triggered into operation by the electrohydraulic operator to



continue contact-separation after the electrohydraulic operator has lost its initial effectiveness.

3,624,325

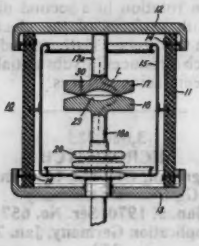
VACUUM-TYPE CIRCUIT INTERRUPTER WITH WELD-RESISTANT CONTACT MATERIAL CONSISTING ESSENTIALLY OF COPPER AND BERYLLIUM

Fordyce H. Horn, deceased, late of Schenectady, N.Y. (by Helen W. Horn, executrix), assignor to General Electric Company

Filed Dec. 29, 1969, Ser. No. 888,398The portion of the term of the patent subsequent to Feb. 24, 1987, has been disclaimed.

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **6 Claims**



Discloses a vacuum-type circuit interrupter having a pair of contacts relatively movable into and out of engagement with each other. The contacts have their circuit-making and breaking regions formed of an alloy consisting essentially of copper and beryllium, the beryllium being present in a quantity of about 6 to 19 percent by weight of the alloy. The alloy is substantially free of additional metallic constituents that are substantially insoluble in the solid state in copper and beryllium and have effective freezing points lower than 860° C.

3,624,326

COMPRESSED-GAS CIRCUIT BREAKER WITH READILY REMOVABLE TERMINAL BUSHING MEANS

Richard Edmund Kane, Monroeville, and Robert L. Hess, North Versailles, both of Pa., assignors to Westinghouse Electric Company, Pittsburgh, Pa.

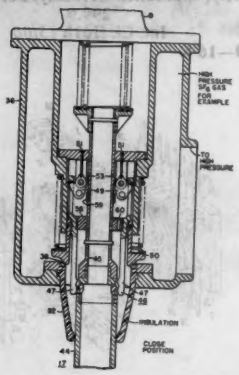
Filed Apr. 4, 1969, Ser. No. 813,441

Int. Cl. H01h *33/54*, *33/86*

U.S. Cl. 200—148 R **11 Claims**

A high-voltage, high-power compressed-gas circuit interrupter is provided utilizing a grounded metal tank having a gas disposed therein at a relatively low pressure, say, for example 45 p.s.i. A pair of serially related arc-extinguishing units are supported within the metallic grounded tank and utilize a blast of gas directed through an orifice to bring about the extinction of the two series arcs simultaneously. A supporting structure disposed within the tank has lateral supports to properly locate the blast valve and contact housing associated with each arc-extinguishing unit. Additionally, the supporting structure supports an operating cylinder to accommodate a movable piston secured to the moving contact of each interrupter.

Terminal bushings are provided at the upper end of the



metallic tank and are easily dismantled therefrom by a contact stud and terminal bushing finger arrangement, which easily separates and permits dismantlement at the upper mounting flange portions of the tank for inspection. The high pressure reservoir may be accommodated at the upper end of the tank between the two terminal bushings.

3,624,327

LIQUID-POOR POWER CIRCUIT BREAKER

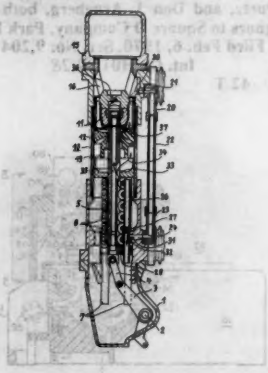
Siegfried Jahrig, and Irmgard Rehner, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 17, 1970, Ser. No. 73,036

Claims priority, application Germany, Sept. 18, 1969, P 19 48 079.6

Int. Cl. H01h *33/68*

U.S. Cl. 200—150 B **4 Claims**



The liquid-poor power circuit breaker has a vertical pole column composed of a metallic mechanism housing, a switching chamber above the housing, and a metallic switching head on top of the chamber. A circulatory system for quenching liquid includes a thin insulating tube between the switching head and the mechanism housing outside of the switching chamber. A slider coupled with the movable switch pin of the power breaker blocks the insulating tube when the switch pin is in the break position.

3,624,328

PUSHBUTTON ALTERNATE ACTION SWITCH WITH A CONTACT ON THE CAM SURFACE OF THE ALTERNATE ACTION MECHANISM

Eric George Hansen, Milwaukee, Wis., assignor to Globe-union Inc., Milwaukee, Wis.

Filed May 18, 1970, Ser. No. 37,948
Int. Cl. H01h 13/56
U.S. Cl. 200—153 J 5 Claims

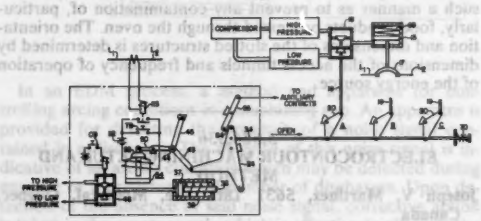
A pushbutton switch having a guide track with contact means coacting therewith arranged so that electrical circuit changeover is effected only on the release stroke of a reciprocative slider bar.

3,624,329

OPERATING MECHANISM FOR A CIRCUIT INTERRUPTER WITH TOGGLE MEANS CONTINUOUSLY IN UNDERSET CONDITION

William H. Fischer, Pittsburgh, and Wayne S. Aspey, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 18, 1968, Ser. No. 776,510
Int. Cl. H01h 3/46, 33/42
U.S. Cl. 200—153 G 7 Claims



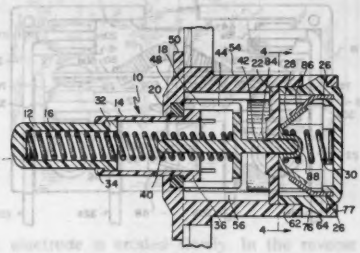
An operating mechanism for a circuit breaker is provided having a rotatable main lever, which is rotated to a closed position by an actuator, such as a piston, movable within a cylinder, and is maintained in the closed position by a latching device, such as a collapsible linkage maintained in its extended position by a magnetic trip device. The arrangement functions, during an opening operation, to actuate the tripping device, which permits collapse of the linkage and opening rotative motion of the main lever. During a subsequent closing, the piston device provides the energy for rotating the main lever to its closed position against the opposition provided by accelerating springs, and the collapsible linkage maintains the main lever in the closed position by the magnetic trip.

3,624,330

TELESCOPING SWITCH

Bela Bognar, Bellingham; Warren V. Gureghian, Watertown, and Anthony R. La Scola, Bellingham, all of Mass., assignors to TRW Inc., Cleveland, Ohio

Filed May 1, 1970, Ser. No. 33,565
Int. Cl. H01h 13/52, 3/48
U.S. Cl. 200—159 R 5 Claims



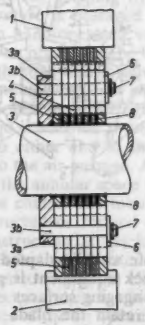
This is a telescoping switch having a spring in the plunger assembly which requires greater force for compression than the spring in the contact assembly with the plunger assembly directly associated with the contact assembly. The switch includes a plunger assembly in which a first plunger is telescopically associated within a second plunger and the second plunger is telescopically associated within a divider.

3,624,331

ELECTRIC CONTACT SYSTEM

Harald Strubin, Neuenhof, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Sept. 1, 1970, Ser. No. 68,681
Claims priority, application Switzerland, Sept. 22, 1969, 14259/69
Int. Cl. H01h 1/32
U.S. Cl. 200—166 E 5 Claims

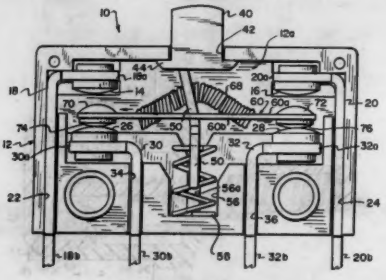


An electric contact system having spaced stationary contact members and a plurality of platelike double-armed contact members rotatably mounted on a shaft between the stationary contacts and which has driving means for rotating the double-armed contacts. Spring means are provided so that the double-armed contacts may be rotated different degrees so that each double-armed contact will form a wedging contact with the stationary contact members.

3,624,332
SNAP SWITCH

Peter Van Benschoten, Rancho Santa Fe, and Jan Albert Kildonk, Corona, both of Calif., assignors to Oak Electro/Netics Corp.

Filed Sept. 9, 1970, Ser. No. 70,827
Int. Cl. H01h 1/36
U.S. Cl. 200—164 11 Claims

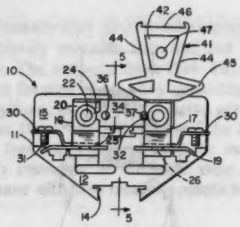


An improvement in a two circuit snap switch of a type having opposed pairs of contacts and a leaflike contact blade positioned therebetween, which is normally urged into engagement with one pair of contacts and movable into engagement with an opposed pair of contacts, wherein an actuator stem extends through the contact blade and is normally biased against a spring in the interior of the housing and, wherein another spring stems across the contact blade and is intersected by the actuator stem. The snap switch of this invention is characterized by the provision of an offset medial portion in the actuator through which the contact blade spring extends, whereby lateral wiping action is imparted to the contact blade and the contacts it engages during movement thereof toward, and away from, the opposed contacts.

3,624,333
KNIFE SWITCH

Charles Allan Schurr, Shaker Heights, Ohio, assignor to Square D Company, Park Ridge, Ill.

Filed Sept. 8, 1970, Ser. No. 70,371
Int. Cl. H01h 1/50
U.S. Cl. 200—166 SD 8 Claims



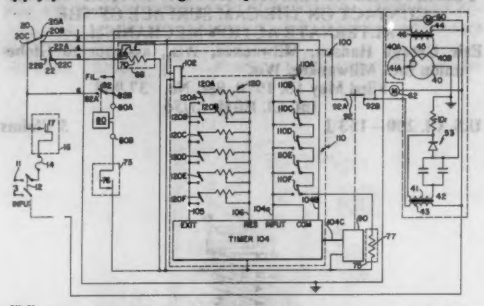
The blade of a knife switch adapted for use on channel mounted terminal block equipment is provided with bosses which interfere with engaging surfaces on identically formed blade receptacles to retain the blade against vibrationally caused motion while in either its closed or open position.

3,624,334
INTERLOCK CIRCUITRY FOR MICROWAVE OVEN

Harry F. Chapell, Maynard, Mass., assignor to Sage Laboratories, Inc., Natick, Mass.

Filed Apr. 1, 1970, Ser. No. 24,538
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 8 Claims

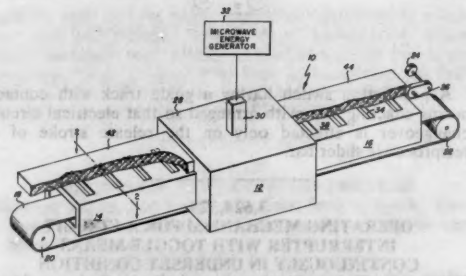
A microwave oven has first and second interlock switches operative when the door is opened to apply power to the filament only of the magnetron and when the door is closed to apply power to the magnetron plate. If either switch malfunctions when the door is opened, the other operative switch interrupts the power to the magnetron plate.



3,624,335
MICROWAVE OVEN

Edward C. Dench, Annisquam, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed June 25, 1970, Ser. No. 49,646
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 8 Claims



The entrance and exit access tunnels of a conveyorized microwave heating oven are provided with means for permitting the flow of the material to be processed without any significant escape of radiated energy through the open ports. Means for prevention of such radiation includes slotted tunnel wall structures with energy absorbing material disposed in such a manner as to prevent any contamination of, particularly, food products processed through the oven. The orientation and dimensions of the slotted structures is determined by dimensions of the access tunnels and frequency of operation of the energy source.

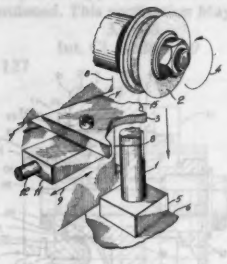
3,624,336
ELECTROCONTOUR MACHINING SETUP AND METHOD

Joseph V. Martinez, 5631 18th Ave, Montreal, Quebec, Canada

Filed Oct. 16, 1970, Ser. No. 81,381
Int. Cl. B23p 1/04, 1/12
U.S. Cl. 219—69 M 6 Claims

Equipment presently used for electromachining internal contours of hard metal tools, such as dies by spark discharge erosion, utilizing an electrode mounted on a descending head that approaches the work under control of a servosystem that maintains a small clearance, is modified for the machining of external contours by the provision of a rotatable wheel-shaped carbon electrode and a supporting structure for holding and indexing a workpiece and for holding a retractable and precisely resettable steel templet for shaping the electrode mechanically. The position of the templet just above the work facilitates preliminary alignment, which may be made on an instrument bench. External contours are machined one side at a time, using the same templet and templet setting if the configuration is symmetrical. The

templet is retracted during electromachining to avoid the risk of any modification of it in the initial stages of electromachining. To prevent the progressive wear of the electrode from producing asymmetry in the work, the templet is repositioned and the electrode dressed to the design contour after every indexing of the work.

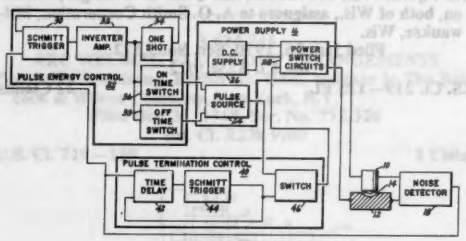


3,624,337

METHOD AND APPARATUS FOR DETECTING AND CONTROLLING THROUGH PULSE ENERGY VARIATIONS ARCING CONDITIONS IN AN EDM PROCESS

Harry D. Kauffman, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 4, 1970, Ser. No. 95,296
Int. Cl. B23p 1/08
U.S. Cl. 219—69 P **8 Claims**



In an EDM process, a method and apparatus for controlling arcing conditions in a machining gap. An apparatus is provided for detecting the presence of a noise signal contained in a discharge. The absence of this noise signal is indicative of an arcing condition which may be detected during any one or a predetermined number of discharges. Upon detection of the absence of said noise signal, corrective action is taken in the power supply which is effective to alleviate the arcing condition.

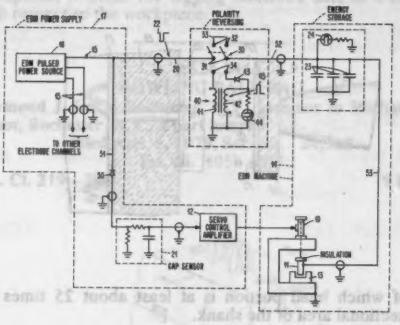
3,624,338

ELECTRICAL DISCHARGE MACHINING PULSE-POLARITY-REVERSING CONTROL

Richard E. Ellis, Lakewood, and Horace O. Winters, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 6, 1970, Ser. No. 61,556
Int. Cl. B23p 1/08
U.S. Cl. 219—69 C **9 Claims**

A control for an EDM machine selectively reverses polarity of the electrical energy supply to the machining electrode. The control consists of double-pole double-throw switching means connected with a polarity reversing transformer and connected such that the energy source is either connected to the electrode directly or through a polarity reversing transformer. In the normal switch position, the polarity is such that the electrode is eroded slowly. In the reverse switch position, the electrode is eroded rapidly. A diode is provided in the servocontrols to allow normal machine operation.

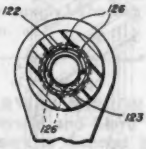


3,624,339

ELECTRIC ARC-TYPE CUTTING GUN

Henry H. Jenkins, 864 West Hacienda Drive, Corona, Calif.

Continuation-in-part of application Ser. No. 648,763, June 26, 1967, now Patent No. 3,483,348, dated Dec. 9, 1969, which is a continuation-in-part of application Ser. No. 583,629, Sept. 30, 1966, now abandoned. This application Sept. 30, 1969, Ser. No. 862,259
Int. Cl. B23k 9/00
U.S. Cl. 219—70 **3 Claims**



An electric arc cutting gun including a housing defining an insulated handle part for gripping by an operator through which air under pressure is passaged to a head. The air is controlled through a hand-operated valve and a heat shield protects the hand of an operator. The head includes an opening extending therethrough and a tubular member mounted therein defines an annular space or chamber with the opening. The ends of the annular space are closed and a tubular chuck is included and is adapted to hold an electrode which may be inserted into either end of the chuck. The annular space is connected to the air passage. A plurality of openings are provided to exit the annular space to emit air around the electrode held by the chuck. The tubular member and tubular chuck are constructed or formed of the same member. Another chuck construction is disclosed which utilizes a spring-biased ball member which extends through an opening in the tubular member to engage an electrode which extends therethrough. A deflector means is attached to the housing to block off selected ones of the air openings as desired.

3,624,340

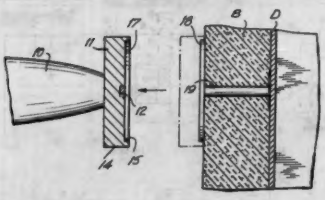
ATTACHMENT PIN FOR CONNECTING INSULATION TO DUCTS BY RESISTANCE WELDING

Milton Hinden, 15 Bay Link, Massapequa, N.Y.

Original application Feb. 7, 1969, Ser. No. 797,603. Divided and this application July 1, 1970, Ser. No. 60,207
Int. Cl. B23k 9/00
U.S. Cl. 219—99 **2 Claims**

An attachment pin for attaching insulating batts to metal by a resistance welding method comprising a shank terminat-

ing at one end in a lathe-sharpened tip, the opposite end of the shank incorporating a head portion, the cross-sectional

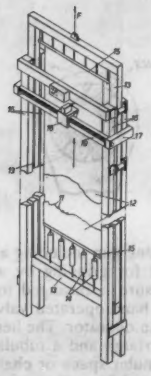


area of which head portion is at least about 25 times the cross-sectional area of the shank.

3,624,341
WELDING

Roy Howard Hazelhurst, Ashton-under-Lyne, England, assignor to Hawker Siddeley Aviation Limited, Kingston-upon-Thames, Surrey, England

Filed July 7, 1970, Ser. No. 52,835
Claims priority, application Great Britain, July 23, 1969, 37,125/69
Int. Cl. B23k *11/00*
U.S. Cl. 219—117 R **5 Claims**



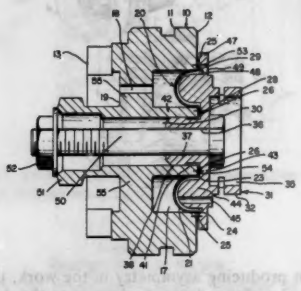
A welding method in which the component parts to be welded are subjected to tensile loading in the direction of the weld seam, during the actual welding process, in order to avoid undesired development of overall curvature or undulations in the welded work due to a distortion upon local heating and subsequent shrinkage. The work material can, by this tensile loading, be stressed up to 90 percent approximately of the stress at yield point of the material.

3,624,342
METHOD OF MAKING A FLEXURAL DIAPHRAGM SEAL

Herbert J. Hoffman, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Nov. 20, 1967, Ser. No. 684,126
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 EM **7 Claims**

A device, such as a rocket engine fuel injector, having two coaxial parts joined by an intervening annular flexure which provides a fluid seal between the parts and/or supports the parts for relative axial movement is fabricated by positioning an annular flexible diaphragm with radially inner and outer flanges between a pair of coaxial members having confronting annular axially presented surfaces seating against opposite sides of the flanges, joining the contacting flanges and

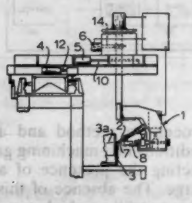


surfaces, and severing each member into two totally separate radially inner and outer portions along annular parting lines located between the joined inner and outer flanges and surfaces to provide a finished device wherein the severed portions of the members and the diaphragm constitute the parts and flexure of the device.

3,624,343
MEMBER DRIVE SYSTEM WITH CONSTANT VELOCITY IN A GIVEN PLANE

Erik Stjernstrom, Milwaukee, and John G. Bollinger, Madison, both of Wis., assignors to A. O. Smith Corporation, Milwaukee, Wis.

Filed Jan. 26, 1970, Ser. No. 5,572
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 PL **22 Claims**



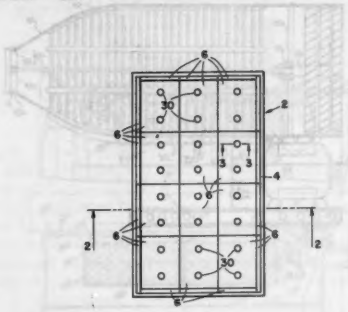
A welding electrode is positioned with a specific relationship to a horizontal plane at a constant resultant velocity. An X-axis drive motor and a Z-axis drive motor are connected to drive the electrode in mutually perpendicular directions. An angle drive motor angularly orients the electrode to the horizontal plane.

A Z-axis tachometer provides a velocity signal as the input signal to an absolute function value generator, the output of which is applied to a quarter-circle signal generator. The latter includes an operational amplifier having a feedback circuit with a plurality of parallel paths each including a diode and a slope controlling resistor to successively vary the slope to produce a circle function output. This provides the proper input to the X-axis drive. A Z-axis position transducer controls the Z-axis drive and also provides a stablilizing control input to the X-axis drive and the angle drive.

3,624,344
ATTACHMENT OF NONMETALLIC ARTICLES TO METALLIC SUBSTRATES

Louis G. Kutzer, Latrobe, Pa., assignor to The Carborundum Company, Niagara Falls, N.Y.

Continuation-in-part of application Ser. No. 749,833, Aug. 2, 1968, now abandoned. This application May 1, 1970, Ser. No. 33,935
Int. Cl. B23k 9/00
U.S. Cl. 219—127 7 Claims

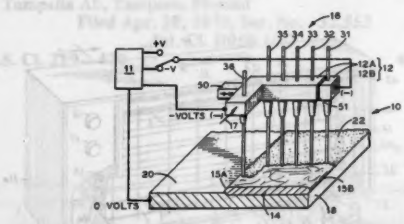


Ceramic articles such as segments in the form of blocks or plates are secured to an underlying metallic surface by means of metal retainers which are inserted in holes or openings extending through the ceramic material. The retainers have frustoconical outer surfaces which engage corresponding surfaces on the ceramic segments. The retainers are securely held to the metal surface by welding. The welding is accomplished by inserting a welding rod through a passage provided through the center of the metal retainer and forming a weld bead that extends from the metallic surface into the passage and beyond an internal flange located adjacent the inner end of said passage.

3,624,345
ARC WELDING ELECTRODE ARRANGEMENTS

Frank W. Armstrong, Barberton, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Oct. 31, 1968, Ser. No. 772,326
Int. Cl. B23k 9/00
U.S. Cl. 219—130 1 Claim

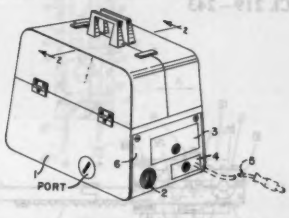


A combination of arc welding equipment and electrodes for depositing cladding material on the surface of a workpiece. The combination generally includes a welding head which carries at least two adjacently spaced continuously replenished consumable electrodes of cladding materials into arc welding relationship with respect to the workpiece to deposit a weld bead of cladding material thereon. Arcing current to the electrode is maintained while arcs are moved with respect to and over the workpiece surface and cladding material from the electrodes deposited thereon. At least one of the electrodes is positioned in lagging relationship with respect to the next adjacent electrode and laterally thereof so it deposits cladding behind and laterally of the next adjacent electrode for forming a weld bead with a more desirable contour for later fusion with a subsequently deposited weld bead. The electrode which subsequently fuses a later deposited weld bead with a previously deposited weld bead is preferably oriented over the lagging edge of the previously deposited weld bead and acts as an anode with respect to the workpiece, whereas the lagging electrode acts as a cathode with respect to the workpiece.

3,624,346
BOWLING BALL BAG

Raymond J. Guth, Rochester, N.Y., assignor to Michael Kolvan, Rochester, N.Y., a part interest

Filed Apr. 1, 1970, Ser. No. 24,568
Int. Cl. H05b 1/00
U.S. Cl. 219—201 9 Claims

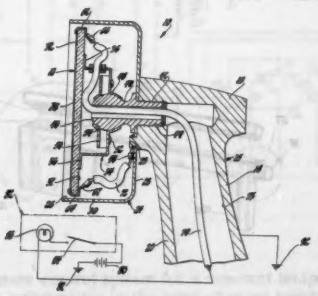


A bowling ball bag, including either a means to conduct heated air into the bag or an electrical heating means and a fan means to provide a forced flow of heated air within the bag, or both in combination, provides efficient, uniform and rapid heating of the contents, such as a bowling ball and bowling shoes. The heating and fan means can be thermostatically controlled to maintain a desired ambient temperature within the bag. Additionally, the power supply for the heating means and fan means can be incorporated in the bag, or a means for making an electrical connection with an external power supply can be provided as the sole or an alternative method of power supply. The bag can be insulated to promote heat retention.

3,624,347
HEATED REARVIEW MIRROR ASSEMBLY

Harold E. Todd, Anderson, and Lloyd T. Fuqua, Fortville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

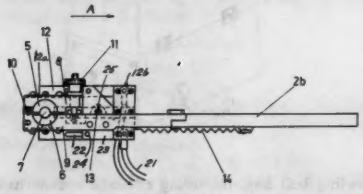
Filed Mar. 16, 1970, Ser. No. 19,943
Int. Cl. H05b 3/22; B60r 1/06
U.S. Cl. 219—219 1 Claim



A rearview mirror assembly for a motor vehicle wherein a mirror element is provided with a nontransmissive, electrically conductive reflective coating across the exterior viewing surface. Elongated contacts extending along the top and bottom edges of the coating provide a uniform current path across the coating when an electrical potential is applied thereacross to directly resistance heat the coating. The low-thermal conductivity of the mirror element acts as an insulating barrier which serves to retain heat at the coating, thereby

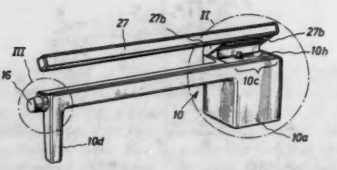
improving the thermal efficiency of the assembly. A backing plate, adhesively attached the other surface of the mirror element, mounts the mirror element on a ball stud located within the cavity of a mirror support housing on the exterior of the vehicle, thereby permitting adjustable universal movement of the mirror element about the ball stud within confines of the cavity. A manual control switch is provided for selectively applying heating current to the coating.

3,624,348
TOOL FOR WELDING TOGETHER PLASTICS MATERIALS
Robert Berset, Le Landeron, Switzerland, assignor to Ramseyer & Cie S.A., Le Landeron, Switzerland
Filed Oct. 13, 1969, Ser. No. 865,753
Int. Cl. H05b *1/00*
U.S. Cl. 219—243 **3 Claims**



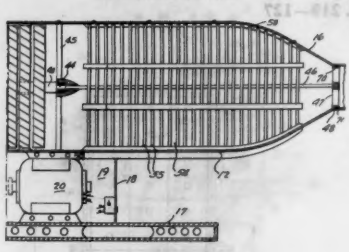
A pair of pincers are provided with means for gripping pieces of plastics material to be welded together. A heated plate is moveably attached to one of the pincer arms and is held between the pieces of plastics material by a pin on the other pincer arm until melting of the plastics material occurs. By opening the pincers, the plate is retracted by spring means and upon reclosing the pincers the pieces of material are pressed into welding contact.

3,624,349
PORTABLE WELDING DEVICE
Rolf Mayer, Giengen, Germany, assignor to Robert Bosch Hausgerate GmbH, Giengen, Germany
Filed Dec. 11, 1969, Ser. No. 884,200
Claims priority, application Germany, Dec. 14, 1968, G 68 11 478
Int. Cl. H05b *1/00*
U.S. Cl. 219—243 **10 Claims**



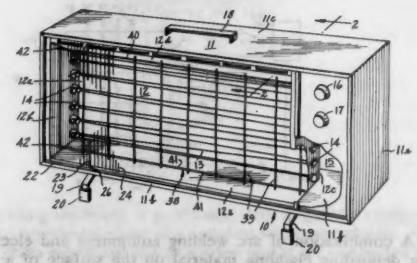
A substantially hollow supporting base made from a plastic material comprises an upper elongated supporting surface for the support of a plurality of plastic layers to be welded and a depressible pressure member cooperating with and movable relative to the supporting surface between a rest position and a welding position. An electric heating wire is connected to and extends along the elongation of the supporting surface for welding, in association with the pressure member, the plurality of plastic layers. All the other electrical components necessary for alternatingly heating the heating wire, are accommodated in the hollow interior of the supporting base.

3,624,350
TURBO-ELECTRIC FURNACE
Fred E. Sanders, 503 East 10th St., Cleveland, Ohio
Filed Feb. 17, 1970, Ser. No. 12,068
Int. Cl. F24h *3/04*; H05b *3/00*
U.S. Cl. 219—369 **12 Claims**



An electrically powered furnace consisting of an elongated housing having an air intake assembly at its forward end and a discharge duct at its rear end leading to a hot air distribution system. A motor-driven air impeller assembly is provided in the intermediate portion of the housing. A first multiple-turn spirally coiled heating element is mounted in the forward portion of the housing between the impeller assembly and the air intake assembly. A second multiple-turn spirally coiled heating element is mounted in the rear portion of the housing between the impeller assembly and the discharge duct. A rotatable suction vane assembly is provided in the discharge duct. to provide smooth flow from the housing and accompanying smooth distribution of the heated air therein.

3,624,351
SHOCK-PROOF ELECTRIC RADIANT HEATER
Frederick M. Kipp, Fairfield, Conn., assignor to General Electric Company
Filed Jan. 26, 1970, Ser. No. 5,711
Int. Cl. H05b *3/32*
U.S. Cl. 219—377 **10 Claims**



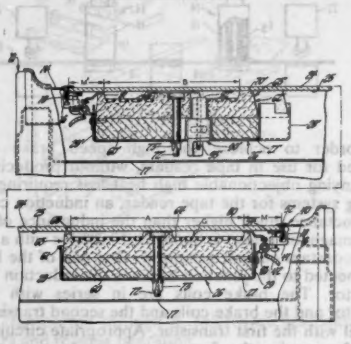
An electric heater having a housing with an open front and a reflector within the housing behind the opening and electrically insulated from the housing. Suspended within the reflector is an electrical resistance heating element. Attached to the housing and covering the open front is an outer first protective grill. A second interior grill is attached to the reflector and located between the suspended heating element and the outer grill. The electric heater construction provides protection for the user against electrical shock in the event of breakage of the heating element.

3,624,352

CERAMIC TOP RANGE SURFACE TEMPERATURE CUT-OFF THERMOSTATIC DEVICE

Homer W. Dexton, Centerville, Ohio, and Donald C. Siegla, Utica, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 22, 1970, Ser. No. 74,399
Int. Cl. H05b 3/68
U.S. Cl. 219—449 4 Claims



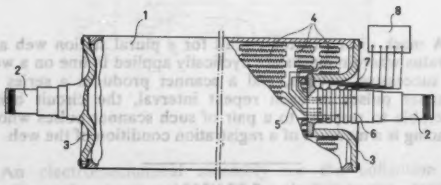
An infrared ceramic cooking assembly having a plurality of radiant heating units wherein each unit has an underlying low density refractory fiber thermal insulating heater block supporting an open coil resistance element in spaced relation to a glass-ceramic cover plate located on the heater blocks. Each unit has a surface temperature limiting device in combination therewith including a thermostat supporting bracket having a heat sensing flange in direct pressure contact with the undersurface of the cover plate and supported on the heater block surface such that the temperature of each bracket flange serves as an analog of the cover plate utensil heating area temperature influencing its associated thermostat for preventing energization of the unit when the overlying heating area exceeds a predetermined temperature.

3,624,353

DRYING CYLINDER

Nils G. H. Bjorklund, Lapinniemi, Finland, assignor to Oy Tampella Ab, Tampere, Finland

Filed Apr. 28, 1970, Ser. No. 32,553
Int. Cl. H05b 1/02
U.S. Cl. 219—470 4 Claims



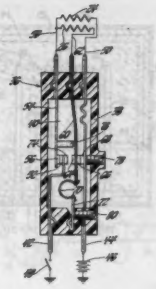
Drying cylinder for paper webs and equivalent having a rotatable cylindrical mantle, to the inside of which there have been attached several coaxially arranged annular heating elements. The heating elements are electrical resistances which are separately adjustable for achievement of desired temperature profile across the mantle surface of the drying cylinder.

3,624,354

THERMOSTATIC CONTROLLED DEFROSTER SWITCH

John H. Heidorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1970, Ser. No. 77,878
Int. Cl. H05b 1/02
U.S. Cl. 219—494 3 Claims



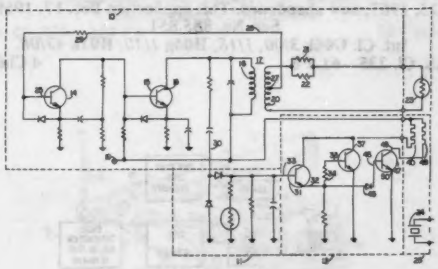
In preferred form, an automobile windshield defroster utilizing dual electric resistance elements to heat air which is then directed against the windshield. A thermostatic switch initially connects the dual resistance element in parallel for maximum heat output and subsequently connects the dual resistance elements in series for a reduced heat output.

3,624,355

TEMPERATURE CONTROL SYSTEM

Jerome P. Friedrichs, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 7, 1970, Ser. No. 78,719
Int. Cl. H05b 1/02
U.S. Cl. 219—497 13 Claims

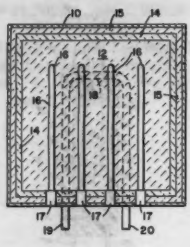


A temperature control system for a constant temperature oven wherein a thermistor in the oven changes resistance in response to changes in temperature causing an amplifier to oscillate. The amplitude of the oscillation signal is proportional to the difference between the oven temperature and a reference temperature. The oscillation is rectified and coupled to a temperature adjusting circuit, including two heater elements. The first heater element is proportionally energized in accordance with the oscillation signal amplitude. The temperature adjusting circuit also includes bias means coupled to the second heater element and operative in response to oscillation signals in excess of a predetermined amplitude to proportionally energize the second heater element.

3,624,356
HEAT STORAGE APPARATUS

Charles Dewey Havill, 22330 Holt Ave., Los Altos, Calif.

Filed May 4, 1970, Ser. No. 34,077
Int. Cl. H05b 3/06
U.S. Cl. 219—530 11 Claims



Heat storage apparatus comprising an insulated box containing a thermal energy storage body consisting essentially of a material selected from the group comprising carbon, magnesium oxide and mixtures thereof which may be in block form, sintered form and powdered form is disclosed. Means for heating the heat storage body and heat exchange means for transporting heat energy to an appropriate power system are described. Embodiments of the invention for operation at different temperatures are disclosed.

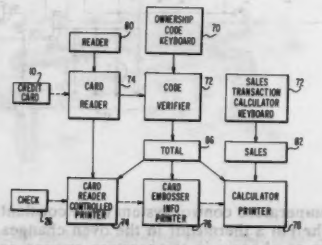
ERRATUM

For Class 234—150 see:
Patent No. 3,624,365

3,624,357
CREDIT CARD SALES TRANSACTION SYSTEM

Lyle E. Wright, 9019 Spring Ave., Lanham, Md.

Continuation-in-part of application Ser. No. 630,782, Mar. 23, 1967, now abandoned. This application Dec. 17, 1969, Ser. No. 885,851
Int. Cl. G06k 3/00, 1/18; H04g 1/30; H01k 43/08
U.S. Cl. 235—61.7 B 4 Claims

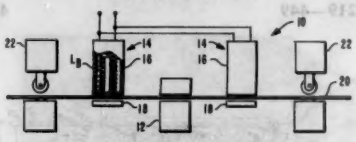


Upon verification of ownership of a credit card, the credit card, a calculator keyboard, and multiple printing apparatus, effect the inscription of all necessary sales transaction information on a voucher constituting a blank check thus giving the seller an unsigned negotiable instrument corresponding to the amount of the purchase.

3,624,358
MAGNETIC BRAKE

Jeffrey M. Bevis, Long Beach, Calif., assignor to Chalco Engineering Corporation, Gardena, Calif.

Filed May 29, 1967, Ser. No. 641,851
Int. Cl. G11b 15/22; B65h 25/32; G06k 7/08; G11b 5/40
U.S. Cl. 235—61.11 R 4 Claims

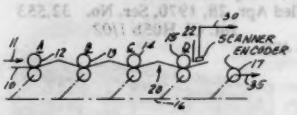


In order to achieve the high speed brake operation required for use in tape readers, without producing an accompanying objectionable high heat loss requiring auxiliary cooling systems for the tape reader, an induction coil having an inductance much higher than the inductance of the coils in the magnetic brakes is connected in series with a transistor and a constant current generator. One end of the brake coil is connected to the junction between the induction coil and a transistor. The brake coils are in series with a second transistor and the brake coils and the second transistor are in parallel with the first transistor. Appropriate circuitry is provided for causing the first transistor to become conductive while the second transistor becomes nonconductive and means are provided for causing these transistors to change their mode each time an appropriate pulse is applied to the circuitry. When the first transistor becomes nonconductive, interruption of the current in the induction coil produces a large voltage at the junction of the inductance coil and the first transistor. This high voltage rise is very rapid because of the rapid interruption of the current in the coil (L di/dt). Consequently, the high voltage connected across the brake coils abruptly actuates them. When a brake off pulse is applied to the circuitry, the second transistor becomes nonconductive and the first transistor becomes conductive. This in turn causes the energy in the brake coils to discharge through the second transistor.

3,624,359
REGISTER CONTROL SYSTEM AND METHOD

Jay C. Roote, Danville, Ill., assignor to Hurletron Incorporated, Danville, Ill.

Filed Oct. 31, 1969, Ser. No. 873,048
Int. Cl. B41f 9/02; B65h 23/22
U.S. Cl. 235—61.11 R 15 Claims



A mark discriminator circuit for a plural station web apparatus wherein marks are cyclically applied in line on a web at successive stations, and a scanner produces a series of scanner pulses in each repeat interval, the circuit being operable to respond to a pair of such scanner pulses whose spacing is a measure of a registration condition of the web.

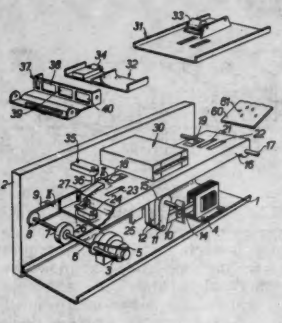
3,624,360
CARD READER AND TRANSPORTER APPARATUS

John Covell Collier, Farnworth; Leonard John Owen, Edgware, and David William Rickards, Stanmore, all of England, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 8, 1969, Ser. No. 883,077
Claims priority, application Great Britain, Dec. 9, 1968, 58,263/69
Int. Cl. G06k 13/07; H01h 43/08; H04g 1/30
U.S. Cl. 231—61.11 R 5 Claims

A card reader is provided with drive rollers which feed a card to a reading position. When the card is in the reading

position it is closed to a reading head. Depending on the result of the data read, the card is either rejected from the

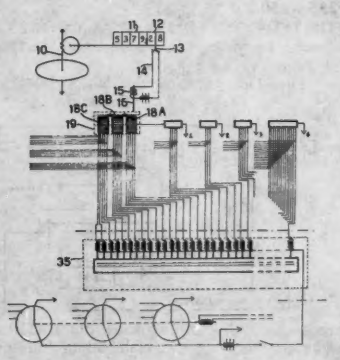


reader or transported through it. Microswitches control the drive rollers and reading operation.

3,624,361
ELECTROMECHANICAL ASSEMBLY FOR RECEIVING AND TOTALING PULSES AND, PARTICULARLY, FOR REGISTERING READINGS TAKEN FROM METERS

Gianfranco Rossi; Paolo Scotuzzi, and Vittorio Ropa, all of Brescia, Italy, assignors to Gaspare Cavallina, Florence; Roberto Berti, Florence and Gianfranco Rossi, Brescia, Italy

Filed Oct. 14, 1968, Ser. No. 767,240
Int. Cl. G01d *4/00*
U.S. Cl. 235—92 AC 6 Claims

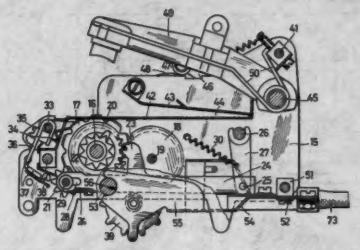


An electromechanical assembly for the collection of readings taken from meters (such as electric power-, water-, or gas-meters) and the recordal of the data on cards or other recording media, is disclosed, wherein the consecutive revolutions of the meter rotor (e.g., the unity wheel or gear) are converted into pulses by the agency of electrical contacts; the pulses are counted and summed by an adding device. Provisions are also taken for encoding the individual meters, consumers, kind of supply (e.g., water, electric power, etc.) and a wide possibility of encoding, data collection and invoicing is afforded. Readings can also be collected by a suitably equipped mobile unit: this can be mounted on a truck, for example.

3,624,362
ELECTRICAL READOUT FOR COUNTERS

Heinz Kelch, Saint Georgen, Germany, assignor to Kienzle Apparate GmbH, Villingen am Schwarzwald, Germany

Filed Oct. 10, 1969, Ser. No. 865,444
Claims priority, application Germany, Oct. 16, 1968, P 18 03 214.9
Int. Cl. G06m *3/06*
U.S. Cl. 235—92 EA 15 Claims

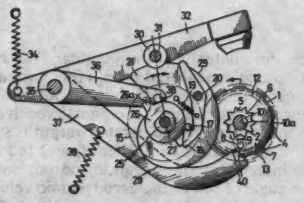


An arrangement for reading out through electrically coded signals, counter registrations and indications. A common shaft within a supporting frame of a unit holds a plurality of electrical contact discs which are rotatably mounted on the shaft. The counter to be read out electrically is provided with individual rotatable drums connected to the electrical contact discs so that these are rotated in correspondence with the drums when the frame is detachably mounted on the supporting means of the counter. Through the application of contact blades supported on a contact carrier block within the frame member, the counter indications are read out through digitally coded electrical signals. The counter can be used in conjunction with a printout mechanism through which printout is realized in a uniquely defined numerical order.

3,624,363
ARRESTING CLEARING APPARATUS

Heinz Kelch, Buchenberg, Germany, assignor to Kienzle Apparate GmbH, Villingen am Schwarzwald, Germany

Filed May 12, 1970, Ser. No. 36,611
Int. Cl. G06c *15/42, 25/00*
U.S. Cl. 235—144 PN 10 Claims

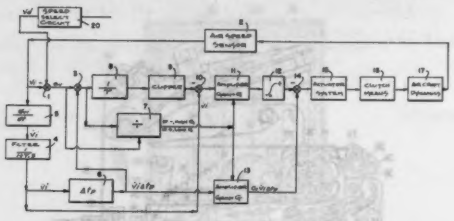


An ordinal printing register has printing wheels which are cleared by manual operations of a clearing shaft supporting the same. The clearing shaft also operates an alignment cam controlling an arresting means to arrest the printing wheels aligned in ordinal positions before printing takes place under the control of a printing alignment cam. A clearing cam driven by the clearing shaft moves, after the printing operation, the arresting means again to the arresting position when a printing wheel is turned to the zero position so that inertia movement of the printing wheels beyond the zero position is prevented.

3,624,364
PARALLEL SPEED STABILIZATION SYSTEM

Daniel O. Dommasch, Blawenburg, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 28, 1970, Ser. No. 6,635
Int. Cl. B64c 19/00
U.S. Cl. 235—150.2 5 Claims

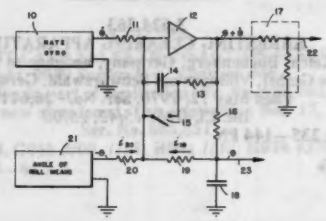


A nonproportional, adaptive, predictive control system for automatically, stabilizing the speed of an aircraft at a pilot-selected speed against changes in the trim airspeed of the aircraft. The system is designed to operate in parallel with the pilot so that it can be manually overridden at anytime; however, when the controls are left free, the system will operate the aircraft independently of the pilot.

3,624,365
VERTICAL ATTITUDE MEASURING DEVICE

William H. Woodworth, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 18, 1969, Ser. No. 843,120
Int. Cl. G06g 7/38; G01c 9/12
U.S. Cl. 235—150.2 2 Claims



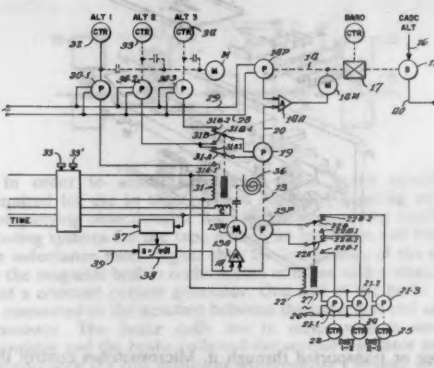
A device for detecting the angular variation of an aerodynamic vehicle measured from a line normal to the surface of the earth utilizing a rate gyro, an angle of roll means and an integrating amplifier. The signal received from the rate gyro is integrated. The integrator output is summed with the output of the angle of roll means, and fed back to the input of the integrator. The integrator output now is proportional to the angle of roll of the aerodynamic vehicle.

3,624,366
VERTICAL FLIGHT PATH ERROR ALTIMETER

James W. Angus, Baldwin, N.Y., assignor to Kollsman Instrument Corporation, Syosset, N.Y.

Filed Jan. 29, 1969, Ser. No. 794,909
Int. Cl. G06g 7/70; G08g 5/02
U.S. Cl. 235—150.22 4 Claims

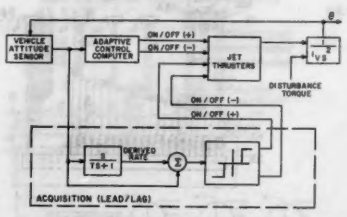
A vertical flight path error indicating system is disclosed for presenting an easily interpretable indication of vertical flight path error to show the direction and degree of the error and the rate of correction of the error. In the illustrative disclosure a typical approach and landing sequence is described and equipment is shown for computing the horizontal distance covered, the required corresponding altitude, and the true altitude. A signal is generated to represent the difference between required and true altitude and a movable index is positioned relative to an altitude deviation scale under the control of the signal.



3,624,367
SELF-OPTIMIZED AND ADAPTIVE ATTITUDE CONTROL SYSTEM

Stephen B. Hamilton, Syracuse; Robert J. Kelly, Jr., Binghamton, and Robert C. Wells, Endwell, all of N.Y., assignors to General Electric Company

Filed Nov. 12, 1968, Ser. No. 774,939
Int. Cl. G06f 15/50; F41g 9/00
U.S. Cl. 235—150.2 10 Claims

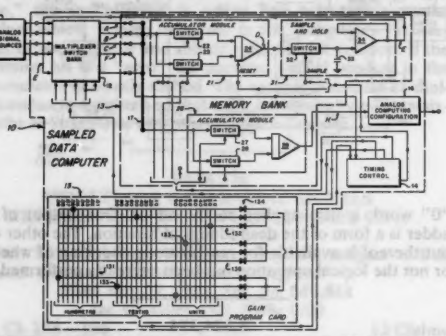


Technique, method and apparatus for obtaining optimized, self-adaptive, attitude control in space vehicles using on-off reaction motor propulsion for torquing the vehicle about its axes of attitude. Formulation to determine a time duration of known thrust to impart a calculated angular acceleration is based on angular velocities and is calculated from maximum permissible angular deviation, an appropriate lesser deviation, initial mass and initial thrust force as parameters and time as a universal variable. Technique provides for operation both in presence of and absence of directional bias forces and includes updating of data representing vehicle parameters. Disclosure includes one apparatus to accomplish the method by application of digital computation.

3,624,368
SAMPLED DATA COMPUTER

Keith E. Close, Phoenix, Ariz., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 19, 1969, Ser. No. 886,630
Int. Cl. G06j 1/00
U.S. Cl. 235—150.51 8 Claims

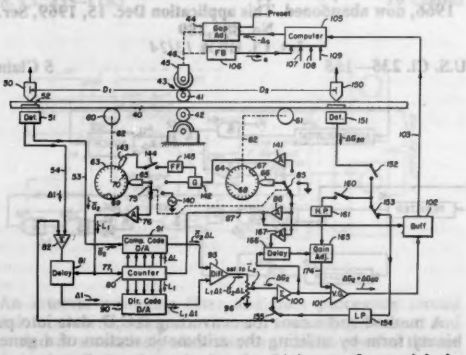


A hybrid analog computer utilizing pulse width modulation techniques wherein plural analog input signals during a sampling cycle are each sequentially applied for respective controlled portions of a sampling interval to integrator amplifiers to establish corresponding predetermined gain characteristics for the input signals. A timing control unit is connected to enable a signal multiplexer to sequentially apply each of a plurality of analog signals to the same accumulator module in order to provide over a number of such successive sampling cycles an analog signal indicative of the sum of the level or gain adjusted input analog signals. A first embodiment of a pulse width modulator includes a plurality of clock-driven counters preloaded by means of a diode matrix gain program card in order to establish a succession of sample enable signals applied to multiplexing circuitry for directing particular analog signals to particular integrators of particular accumulator modules. An adaptive gain control varies the gain imposed on a multiplier indicating analog signal magnitude with that of a ramp function from a sawtooth generator and setting the sample enable signal width upon level coincidence to enable a corresponding control gain adjustmnt of a multiplicand incidating analog signal and provide a product indicating analog output signal. A quotient pulse width modulator compares a divisor indicating signal to establish the width of a sample enable signal as a function of the quotient of the input signals which quotient pulse width modulator is used to control the integration times in a differential analyzer.

3,624,369
THICKNESS REDUCTION CONTROL SYSTEMS

Ruloff F. Kip, Jr., Inningwood Road, Ossining, N.Y.

Filed Aug. 4, 1969, Ser. No. 847,234
Int. Cl. B21b 37/12; G05d 5/02
U.S. Cl. 235—151.1 11 Claims

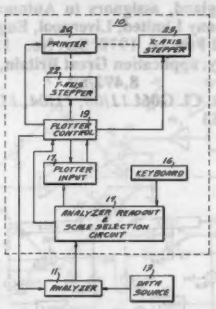


In an installation for reducing the thickness of material, the thickness reduction is controlled by computing systems based on equations in which the predicted thickness error is a function of the differential between the input and output lengths of a given volume of material passing through the installation. Greater accuracy may be obtained by disclosed modes of follow-on control. Procedures are discussed for recalibration of the systems.

3,624,370
DIGITAL PLOTTING DEVICE

James Gray, Jr., Wheaton, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 5, 1969, Ser. No. 874,192
Int. Cl. G06k 15/22; G01d 9/38
U.S. Cl. 235—151.3 6 Claims

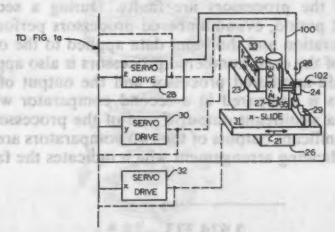


A digital plotting device receives information in digital form consisting of a most significant figure and at least one subsequent significant figure. The plotting device includes a plurality of printing hammers positioned opposite recording paper. A driving mechanism positions the plurality of hammers in response to the subsequent significant digits and actuates a particular printing hammer in response to the most significant digit. The actuated printing hammer marks the recording paper in the desired location.

3,624,371
APPARATUS FOR GENERATING AND RECORDING A PROGRAM AND PRODUCING A FINISHED PART THEREFROM

Norman D. Neal, Cincinnati; Harold D. Wiebe, Sharonville, Ohio, and Herbert M. Fuldner, Ft. Thomas, Ky., assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Aug. 6, 1970, Ser. No. 61,703
Int. Cl. G05b 19/42
U.S. Cl. 235—151.11 6 Claims



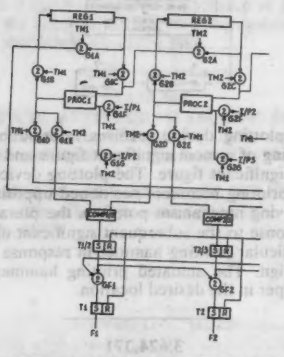
An automatic machine tool and control system having the ability to first generate and record in a storage medium a desired part configuration defined by a model, and second, to drive the machine tool in response to an interrogation and decoding of said storage medium thereby cutting the desired part configuration in a workpiece. The system is comprised of a machine tool having three mutually perpendicular axes of motion under servomechanism control. A tracing head is adapted to the machine tool, and tracing head outputs are coupled through servomechanism control circuits in a stan-

dard numerical control to an input of a computer. Also connected to the computer is an input/output device which allows for general control over the process and permits the input of auxiliary commands. The computer is responsive to its inputs and generates a part program defining the desired part configuration as represented by the model. An output of the computer is connected to an encoding device which records the part program in the storage medium. The part program may be played back by interrogating and decoding the storage medium with the numerical control input circuits. Hence, the machine tool is controlled in a standard fashion to cut a finished workpiece corresponding to the model traced.

3,624,372
CHECKING AND FAULT-INDICATING ARRANGEMENTS

Alexander Schroder Philip, and John Richard Francis, both of Liverpool, England, assignors to Automatic Telephone & Electric Company Limited, Liverpool, England

Filed Feb. 16, 1970, Ser. No. 11,760
Claims priority, application Great Britain, Feb. 17, 1969, 8,472/69
Int. Cl. G06f *11/08, 11/04, 11/00*
U.S. Cl. 235—153 **6 Claims**



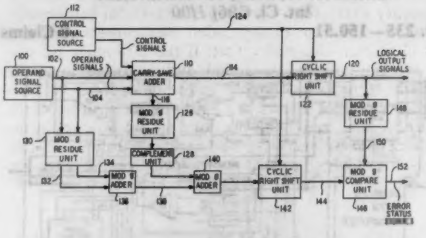
A checking and fault-indicating arrangement is provided for four or a larger even number of processors in a data processing system. During a first predetermined period, odd-numbered processors perform a processing operation and the input date applied to one of the odd-numbered processors is also applied to a particular one of the adjacent even-numbered processors and the output of the two processors is compared in a comparator which provides a significant output if one of the processors are faulty. During a second predetermined period, even-numbered processors perform a processing operation and the input data applied to the other adjacent one of the even-numbered processors is also applied to said one odd-numbered processor and the output of the two processors is compared in a second comparator which also provides a significant output if one of the processors is faulty. The significant outputs of the two comparators are applied to an indicating arrangement which indicates the faulty processor.

3,624,373
APPARATUS FOR PERFORMING AND CHECKING LOGICAL OPERATIONS

Ronald H. Birchall, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Dec. 16, 1969, Ser. No. 885,568
Int. Cl. G06f *11/02, 7/38*
U.S. Cl. 235—153 **5 Claims**

Implementation and checking of any one of the logical functions AND, OR, EXCLUSIVE-OR and IDENTITY of two *n*-bit operands A and B are accomplished by applying A and B to a carry-save adder. In addition an *n*-bit control quantity C, which is selected to be either an all-"1" or an all-

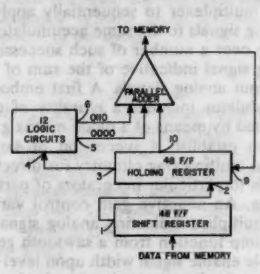


"0" word, is also applied to the adder. One output of the adder is a form of the desired logical function. The other output thereof is available for residue code checking of whether or not the logical operation has been correctly performed.

3,624,374
BINARY TO BINARY CODED DECIMAL CONVERTER

Louis Kent Steiner, Minneapolis, Minn., assignor to Control Data Corporation, South Minneapolis, Minn.

Filed Nov. 18, 1970, Ser. No. 90,503
Int. Cl. H04l *3/00*
U.S. Cl. 235—155 **7 Claims**

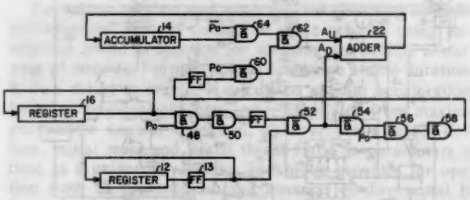


A binary-to-binary-coded-decimal (BCD) converter wherein the binary number is held in a first register and is shifted bit by bit into a second register as the number is converted. A plurality of logic circuits connected to the second register examine four-bit segments of the second register and control an adder which increments the number when the binary values of the examined four-bit segments are equal to predetermined quantities.

3,624,375
BINARY CODED DECIMAL TO BINARY CONVERSION APPARATUS

John W. Pross, Jr., Newfoundland, N.J., assignor to the Singer Company, New York, New York

Continuation-in-part of application Ser. No. 590,995, Oct. 31, 1966, now abandoned. This application Dec. 15, 1969, Ser. No. 885,289
Int. Cl. H03k *13/24*
U.S. Cl. 235—155 **5 Claims**



A method and means for converting B.C.D. data into pure binary form by utilizing the arithmetic section of a general

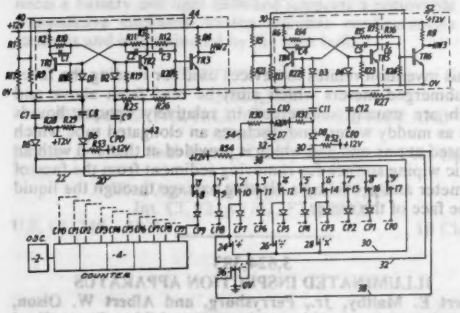
purpose digital computer. The conversion is based upon the computer's multiply function wherein the binary-coded decimal information is treated as the multiplier and a preselected set of constants are used as multiplicand. That is, a separate constant for each digit to be converted is accessed from memory every four-word times and multiplied serially bit by bit by the four-binary-coded bits representing the decimal character, low order first. If the multiplier bit is a "one," the multiplicand is added and becomes a partial product which, in turn, is stored in the computer's "A" register or accumulator and shifted right one-bit position. If the multiplier bit is a "zero" the previous partial product in the accumulator is merely shifted. The various constants or multiplicands are weighted so that each successive one is ten-sixteenths as large as its immediately preceding one.

3,624,376

CIRCUIT FOR GENERATING SIGNALS REPRESENTATIVE OF OPERATED KEYS ON A COMMON LEAD

Norbert Kitz, Uxbridge, Middlesex, England, assignor to Bell Punch Company Limited, London, England

Filed July 29, 1969, Ser. No. 845,811
Int. Cl. G06f 1/00; G08c 9/00
U.S. Cl. 235—160 **13 Claims**



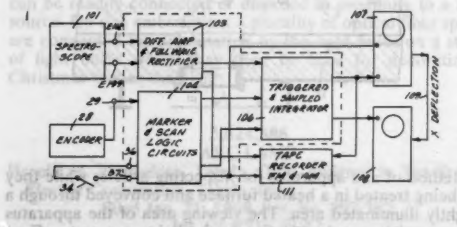
An electronic calculating machine provides electronic signals for number keys that identify each key at a common lead conveying signals from a plurality of keys. The signals are generated from a pulse generator and counter circuit so that each key produces a different waveform within a period during which the pulse generator produces 10 pulses PO to P9. Each signal contains a common reference pulse P0.

3,624,377

INTERVAL AVERAGING FILTER

Milton Zerkin, Chicago, Ill., assignor to American Medical Association Education and Research Foundation, Chicago, Ill.

Filed Oct. 30, 1968, Ser. No. 771,718
Int. Cl. G06g 7/18; G01j 3/00
U.S. Cl. 235—183 **10 Claims**



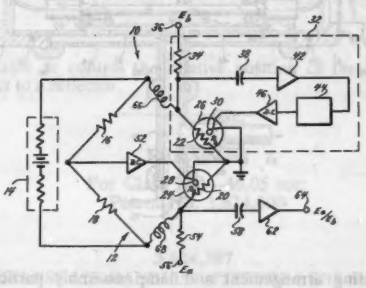
An interval averaging filter and data processing circuit which receives input signals that are normally processed and recorded at a relatively slow rate in order to resolve the information contained in the signal which increases the speed of processing the signal many times and allows the intelligence to be resolved and presented with great accuracy. The information is rectified and integrated and a pulse train of variable amplitude is obtained by periodically passing the output of the integrator to an indicator such as a memory cathode-ray scope. The integrator includes a capacitor which is discharged periodically after a pulse output has been obtained. This device embodies a dynamic low-pass filter with an electronically adjustable cutoff frequency.

3,624,378

ELECTRONIC ANALOG DIVISION MEANS

Lloyd E. Brunkhorst, Florissant, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 24, 1969, Ser. No. 869,006
Int. Cl. G06g 7/16
U.S. Cl. 235—196 **19 Claims**



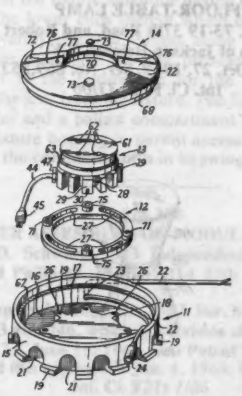
Electronic circuit means for performing the division of one or more signals by another signal, said electronic circuit means including at least one bridge circuit including electrooptical devices therein which act as variable attenuators in the performance of one or more division operations, said circuit means also including direct-current feedback means to the electrooptical devices for control purposes.

3,624,379

LIGHTING DEVICE

Ernest Noel Bliss, Gerrards Cross; David John Bridgers, London, and Harold Edward Herbert Kirby-Johnson, London, all of England, assignors to British Lighting Industries Limited, London, England

Filed July 18, 1969, Ser. No. 843,015
Claims priority, application Great Britain, July 23, 1968, 35190/68
Int. Cl. B64f 1/20
U.S. Cl. 240—1.2 **6 Claims**



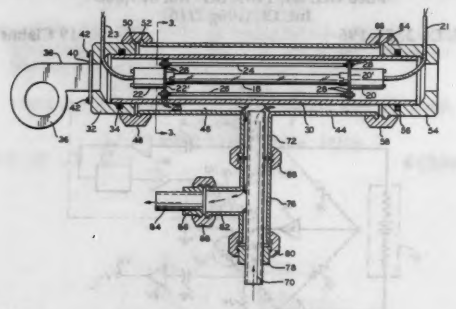
A lighting device suitable for use on aerodrome runways comprises a cover formed with a central opening and

recessed portions extending from the central opening to the periphery of the cover. A lamp assembly carrying a lamp holder is mounted on a base and extends through the central opening so that light from a lamp held in the lamp holder emerges from the lighting device through the recessed portions of the cover.

3,624,380
LIGHTING ARRANGEMENT

Noel Davis, Chagrin Falls, Ohio, assignor to Integrated Development & Manufacturing Company, Chagrin Falls, Ohio

Filed Apr. 22, 1970, Ser. No. 30,662
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 **5 Claims**

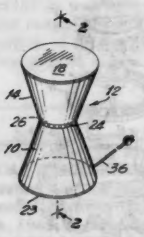


A lighting arrangement and lamp assembly particularly suitable for producing illumination with a minimum of the infrared range of wavelengths and especially suited for use in environmental growth chambers. The lamp assembly disclosed includes a tungsten-iodide lamp positioned in a first housing member formed from a material which is transparent to light of a substantial range of wavelengths including infrared. A second housing member formed from a light-transmissive material is positioned about the first housing member in spaced relationship thereto. Means are provided to seal between the first and second housing members to provide a closed chamber through which illumination produced by the lamp must pass in order to escape from the assembly. Fan means function to pass cooling air through the first housing member and about the lamp positioned therein; and, means are provided for circulating water through the sealed chamber between the first and second housing members so that all the light passing from the assembly is filtered through the circulating water.

3,624,381
FLOOR-TABLE LAMP

Ronald M. Pollack, 73-19 37th Road, and Robert J. Karl, 34-59 89th St., both of Jackson Heights, N.Y.

Filed Oct. 27, 1969, Ser. No. 869,553
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 SL **2 Claims**

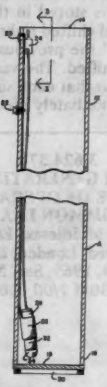


A combination floor lamp and table wherein the protection for the light source also forms the support structure for a tabletop.

3,624,382
METER-READING DEVICES

Charles W. White, 4210 Gardon, Saint Louis County, Mo.

Filed Mar. 23, 1970, Ser. No. 21,863
Int. Cl. F21l *1/00*
U.S. Cl. 240—2.18 **4 Claims**

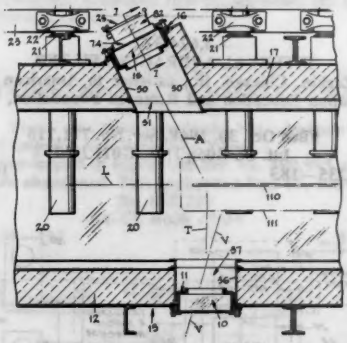


This invention relates to devices used for reading the faces of submerged meters which must be read from above and which are usually submerged in relatively opaque liquids such as muddy water, and discloses an elongated tube which is closed at one end and which is provided at that end with an elastic wiping surface for removing sediment from the face of the meter and providing a viewing passage through the liquid to the face of the meter.

3,624,383
ILLUMINATED INSPECTION APPARATUS

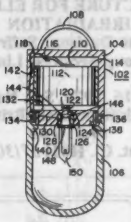
Robert E. Maltby, Jr., Perrysburg, and Albert W. Olson, Toledo, both of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Oct. 31, 1969, Ser. No. 872,878
Int. Cl. F21s *1/00*; F21v *33/00*
U.S. Cl. 240—2.18 **4 Claims**



Method of and apparatus for inspecting articles while they are being treated in a heated furnace and conveyed through a brightly illuminated area. The viewing area of the apparatus is arranged in angular relation to the light sources to afford protection for an observer from the glare of the light sources while permitting satisfactory examination of an article passing through the area.

3,624,384
ILLUMINATED EARRING
Gordon R. Ledingham, and Norman L. Ledingham, both of 2486 Valle Citos Court, La Jolla, Calif.
Filed Nov. 29, 1968, Ser. No. 779,739
Int. Cl. F21v 33/00
U.S. Cl. 240—6.4 W 4 Claims



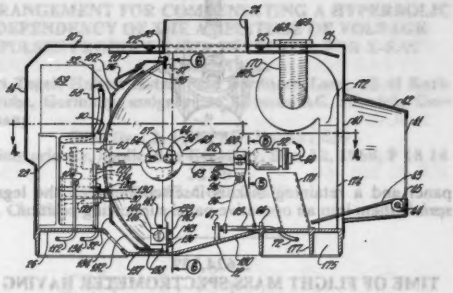
An illuminated earring having a housing secured to an earring support, which housing encloses and electrically connects a battery and light bulb and supports a removable light transmissive enclosure having selective configurations that encloses and is illuminated by the light bulb.

3,624,385
ORNAMENTAL ILLUMINATION DEVICE AND ADAPTER
Lamar J. Wall, Seal Beach, Calif., assignor to Poly-Optics, Inc.
Filed Apr. 9, 1970, Ser. No. 27,064
Int. Cl. F21p 1/02; F21l 15/08
U.S. Cl. 240—10 P 10 Claims

An adapter is provided whereby a spray of optical fibers can be readily connected or disposed in proximity to a light source. On one embodiment a plurality of optical fiber sprays are connected for illumination by the light bulbs on a string of light bulbs which may then be used for decorating a Christmas tree or the like.

3,624,386
ARC LAMP
Harold M. Plumadore, Toledo, Ohio, assignor to The Strong Electric Corporation, Toledo, Ohio
Filed Jan. 21, 1969, Ser. No. 792,387
Int. Cl. F21v 19/02
U.S. Cl. 240—44.2 7 Claims

The disclosure embraces an arc lamp construction utilizing a lamp comprising a gas-filled envelope containing spaced electrodes in combination with magnetic forces for controlling the arc flame, and a mounting for the gas-filled lamp

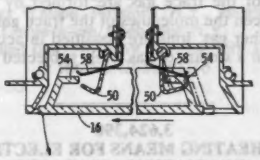


adjustable to control the relative position of the arc with respect to a reflector.

ERRATUM

For Class 240—46.05 see:
Patent No. 3,624,600

3,624,387
FRAMELESS AIR-HANDLING FIXTURE LENS SUPPORT
William R. Eargle, Jr., Vicksburg, Miss., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 30, 1969, Ser. No. 862,279
Int. Cl. H05b 33/02
U.S. Cl. 240—51.11 9 Claims

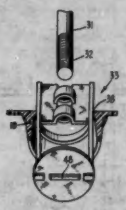


An interior lighting fixture of the air-handling type including a pair of spring-urged lens support members along the lower edge of the fixture sidewalls having outwardly directed flanges on the lower ends thereof which coact with complementary inwardly directed flanges along the length of the frameless lens to support the lens, provide for lens centering with respect to the fixture and for the simple and quick removal of the lens from the fixture. The fixture also includes a lamp holder and a ballast compartment pivotally mounted within the fixture housing to permit access to the ballast elements when the compartment is in its swing-down position.

3,624,388
HANGER ASSEMBLY FOR MODULAR PANELS
Robert A. D. Schwartz, 513 Independent Road, Oakland, Calif., and Philip W. Pfeiffer, 314 27th Ave., San Mateo, Calif.
Original application Sept. 22, 1967, Ser. No. 688,284, now Patent No. 3,480,246, which is a division of application Ser. No. 464,122, June 15, 1967, now Patent No. 3,368,070. Divided and this application Jan. 6, 1969, Ser. No. 789,146
Int. Cl. F21s 1/06
U.S. Cl. 240—78 LK 8 Claims

A hanger assembly for supporting a light-transmitting panel in vertically spaced positions relative to a hanger rod in

which legs depend from said rods through an aperture in the



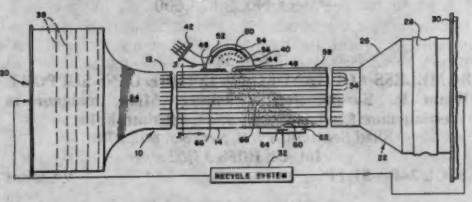
panel and a retaining disk is inserted between the legs to spread them into an operative panel supporting position.

3,624,389

TIME OF FLIGHT MASS SPECTROMETER HAVING A FLOWING GAS STREAM PERPENDICULAR TO THE ION DRIFT FIELD FOR INCREASED RESOLUTION

Martin J. Cohen, West Palm Beach; David I. Carroll, Lantana, and Roger F. Wernlund, Lake Worth, all of Fla., assignors to Franklin Gno Corporation, West Palm Beach, Fla.

Filed Nov. 26, 1968, Ser. No. 779,097
Int. Cl. B01d *59/44*; H01j *39/34*
U.S. Cl. 250—41.9 29 Claims



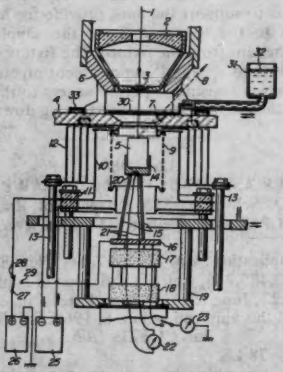
Apparatus and methods for sorting and detecting trace gases which undergo ion-molecule reactions. Positive or negative ions of the trace gas are formed by ion-molecule reactions between the molecules of the trace gas and primary ions from another gas. Ions are classified in accordance with their velocity in a stream of gas while subjected to an electric drift field.

3,624,390

SPECIMEN-HEATING MEANS FOR ELECTRON BEAM IRRADIATION APPARATUS

Tadao Watanabe, Katsuta, Japan, assignor to Hitachi, Ltd., Chiyoda, Tokyo, Japan

Filed Sept. 22, 1970, Ser. No. 74,412
Claims priority, application Japan, Sept. 24, 1969, 44/75249
Int. Cl. H01j *37/20*
U.S. Cl. 250—49.5 B 5 Claims



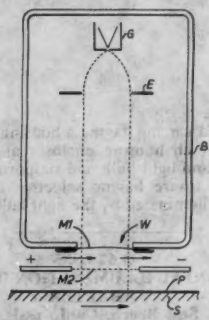
A specimen-heating means for electron beam irradiation apparatus comprising a cylindrical mesh filament concentrically surrounding a specimen, a filament support concentric with said filament, a current source feeding said filament with a heating current, and means to take up thermions given off said filament and the heated specimen, whereby the specimen may be heated through the radiation of heat from said filament and through the bombardment of the specimen with thermions given off said filament.

3,624,391

WINDOW STRUCTURE FOR ELECTRON BEAM IRRADIATION

William Henry Thomas Davison, Saffron Walden, England, assignor to T. I. (Group Services) Limited, Edgbaston, Birmingham, England

Filed Apr. 16, 1970, Ser. No. 29,231
Claims priority, application Great Britain, Apr. 16, 1969, 19,316/69
Int. Cl. H01j *37/30*
U.S. Cl. 250—49.5 TE 8 Claims



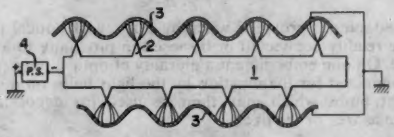
For electron beam irradiation apparatus in which electrons generated in an evacuated chamber emerge through a cooled pressuretight window to impinge on the material under treatment a window structure comprises two spaced membranes, one of which is gastight to withstand the pressure difference and the other is permeable to both gas and electrons but prevents a cooling gas passed between the membranes from disturbing the surface of the material.

3,624,392

ELECTROPHOTOGRAPHIC CHARGING APPARATUS COMPRISING NEEDLE POINT DISCHARGE ELECTRODES AND CONCAVE SHIELD ELECTRODES

Akira Kurahashi; Masayoshi Ishihara, and Giichi Marushima, all of Tokyo, Japan, assignors to Cannon Camera Kabushiki Kaisha, Ohta-ku, Tokyo, Japan

Filed Nov. 20, 1968, Ser. No. 777,215
Claims priority, application Japan, Nov. 28, 1967, 42/76631
Int. Cl. G03g *15/00*
U.S. Cl. 250—49.5 ZC 13 Claims



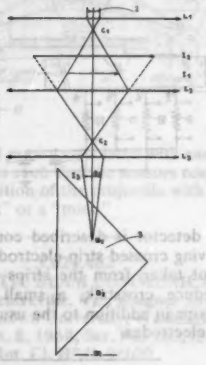
A corona discharger for electrophotography comprises at least one needle electrode structure and at least one shielding member disposed opposite to the needles of the electrode structure. Main corona discharge is generated between the end of each needle of the electrode structure and the shielding member to impress a charge on a photosensitive sheet. The unique needle electrode structure and shielding member are formed and arranged to apply uniform charge to the photosensitive sheet with high efficiencies.

3,624,393

ELECTRON MICROSCOPE COMPRISING A VELOCITY FILTER SYSTEM

Emile Torquebiau, Paris, France, assignor to Societe D'Optique Precision Electronique Et Mecanique (Sopelem), Paris, France

Filed July 13, 1970, Ser. No. 54,243
Claims priority, application France, Aug. 13, 1969, 6927880
Int. Cl. H01J *37/26, 37/12, 37/14*
U.S. Cl. 250—49.5 A 2 Claims



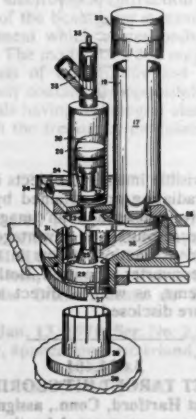
In an electron microscope having a velocity filtering system involving reflection in a prism, the normal objective lens is replaced by a complex lens comprising three electrostatic lens elements. This arrangement enables the order of image and diffraction diagram in the propagation path to be reversed, so that the diffraction diagram can be filtered as well as the image.

3,624,394

AUTOMATIC SAMPLE CHANGER FOR X-RAY FLUORESCENCE SPECTROMETER

Carl A. Youngman, and Glenn D. Roe, both of Dallas, Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed May 2, 1969, Ser. No. 821,308
Int. Cl. G01n *23/22*
U.S. Cl. 250—51.5 6 Claims



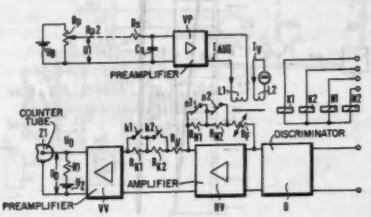
X-ray fluorescence spectrometer apparatus for automatically analyzing a predetermined number of sample discs. A turntable mounts a plurality of sample holders, each of which can receive a plurality of discs. Prior to analysis, the discs are loaded in sample storage means connected to sample injector means by special gating means. The sample injector means sequentially injects discs into the sample holders as the turntable revolves. Drive means for rotating the turntable in predetermined steps is disclosed.

3,624,395

ARRANGEMENT FOR COMPENSATING A HYPERBOLIC DEPENDENCY OF THE AMPLITUDE OF VOLTAGE PULSES PRODUCED IN A DETECTOR FOR X-RAY QUANTA

Kurt Togel; Hubert Hotzel, and Bernhard Lang, all of Karlsruhe, Germany, assignors to Siemens AG, Munich, Germany

Filed Dec. 2, 1969, Ser. No. 881,430
Claims priority, application Germany, Dec. 12, 1968, P 18 14 321.0
Int. Cl. G01n *23/00*
U.S. Cl. 250—51.5 13 Claims



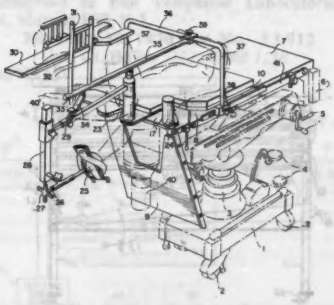
In a linear X-ray spectrometer with an analyzer crystal displaceable along a straight guide line, a potentiometer pickup is displaceable in proportion to the linear movement of the analyzer crystal. The pickup is attached to the mount of the analyzer crystal and belongs to a potentiometer contained in an amplifier arrangement that compensates the hyperbolic dependency of the amplitude of pulses produced in an X-ray detector.

3,624,396

ORTHOPEDIC APPARATUS FOR USE WITH IMAGE INTENSIFICATION EQUIPMENT

William Sidney Watson, Pittsford, N.Y., assignor to The Pelvic Anchor Corporation, Rochester, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,181
Int. Cl. G03b *41/16*
U.S. Cl. 250—53 7 Claims



In surgical procedures in which unilateral traction is applied to the appropriate lower extremity to immobilize the pelvis against a perineal post and an iliac post, and in which image intensification techniques are used, the iliac post is adjusted relative to the perineal post and in a direction parallel to the mesial plane according to the length of the pelvis. Tube-locating means movable with the iliac post in fixed mesial relation therewith determine the position of the intensifier tube under the patient. The foot or leg traction unit and the well leg support are carried by arms mounted on and extending outwardly from the perineal post above the patient, without obstructing access of the intensifier tube to the body of the patient. The vertical moment on the post due to the

weight of these extended parts is absorbed by an arm or arms extending inwardly from the perineal post above the patient to a fixed point of support.

3,624,397

RADIOGRAPHIC METHOD FOR THE DETECTION OF RESIDUAL CORE MATERIAL COMPRISING THE USE OF RADIOGRAPHICALLY DETECTABLE POWDER

Clyde R. Honeycutt, Cleveland Heights, and Frank J. Sattler, Chesterland, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Oct. 1, 1969, Ser. No. 862,658
Int. Cl. G01n *23/00*
U.S. Cl. 250—65 11 Claims

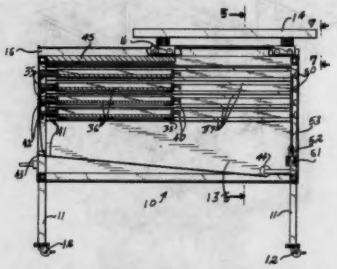
Method of detecting the presence of core material in a cored casting comprising injecting a radiographically detectable powder into the passages of the hollow casting, vibrating the casting to aid in distributing the powder throughout the passages, exposing the treated casting to penetrating radiation, and then inspecting the casting.

3,624,398

SERIAL RADIOGRAPH TABLE

Weldon D. Arndt, 1201 83rd Ave. N., Brooklyn Park, Minn.

Filed Sept. 25, 1969, Ser. No. 861,116
Int. Cl. G01n *21/00*
U.S. Cl. 250—66 4 Claims



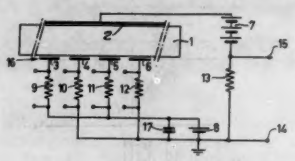
A table having a patient-receiving movable top affixed thereto with a plurality of film-receiving trays movably mounted in tracks positioned in vertical spaced apart relationship generally beneath the movable top. The tracks extend so that the trays move between a position below the top and a second position spaced horizontally therefrom. The trays are biased towards the first position and normally held in the second position until the sequential release thereof by electronic timing apparatus.

3,624,399

SEMICONDUCTOR DEVICE FOR DETECTING RADIATION

Jacob Anne Den Boer; Johan Hendrik Dieperink, and Karel Mulder, all of Amsterdam, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Oct. 16, 1968, Ser. No. 768,034
Claims priority, application Netherlands, Oct. 25, 1967, 6714455
Int. Cl. G01t *1/24*
U.S. Cl. 250—83.3 8 Claims



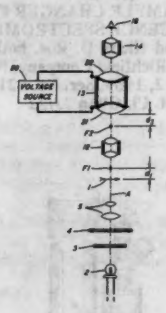
A radiation detector is described comprising a semiconductor disc having crossed strip electrodes on opposite sides with the output taken from the strips of one of the electrodes. To reduce crosstalk, a small voltage is applied between the strips in addition to the usual back-biasing voltage across the electrodes.

3,624,400

APPARATUS FOR THE PRODUCTION OF HIGH-RESOLUTION VISIBLE IMAGES OF OBJECTS ILLUMINATED BY OR EMITTING INFRARED RADIATION

Barry George Cohen, P.O. Box 526, Elizabeth, N.J.

Filed Jan. 28, 1970, Ser. No. 6,365
Int. Cl. H01j *31/50*
U.S. Cl. 250—83.3 HP 14 Claims



High-resolution visible images of objects illuminated by or emitting infrared radiation are obtained by a unique combination of objective lenses and an image-converter tube adapted so that the resolution is advantageously limited by the wavelength and diffraction effects in the lenses rather than by the image-converter tube itself. Both monocular- and binocular-lens systems, as well as direct and incident illumination systems, are disclosed.

3,624,401

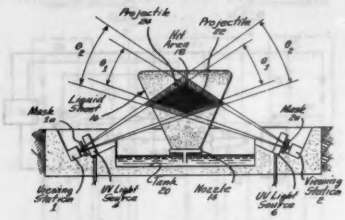
ULTRAVIOLET TARGET HIT SCORING SYSTEM

Milton Stoller, West Hartford, Conn., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 6, 1969, Ser. No. 864,083
Int. Cl. G01j *1/06*
U.S. Cl. 250—83.3 UV 3 Claims

A scoring system for a nonmaterial target is provided by directing ultraviolet light across the face or front of the target in such manner that a projectile striking the target must pass

through the ultraviolet light. Photoelectric sensors are arranged to detect ultraviolet light reflected from projectiles passing through the light and striking the target. The light



passes through coded masks associated with each sensor. The coding of the masks is such that the sensors respond discretely to indicate the position of the projectile with respect to the target and thus a "hit" or a "miss."

3,624,402

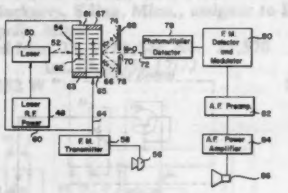
ELECTROMAGNETIC BEAM COMMUNICATION UNIT

William J. Thaler, Centreville, Va., assignor to President and Directors of Georgetown University, Washington, D.C.

Filed Feb. 8, 1968, Ser. No. 703,959

Int. Cl. H04b *9/100*

U.S. Cl. 250—199 **14 Claims**



A modulation cell which has two crystals side-by-side and oppositely oriented are driven by the same electromagnetic frequency modulated signal transmitter to form in the cell two parallel but similar moving periodic electro-optic diffraction gratings. An electromagnetic signal carrier producing source, such as a laser, has its beam pass through the sides of the cell and both electro-optic diffraction gratings. The zero diffraction order of the beam after it leaves the crystal has a frequency component which corresponds to the frequency modulated signal. The modulation cell may be a liquid or gas unit, with two sets of transmitters and absorbers, or the modulation cell may contain two oppositely oriented side-by-side optical crystals having an integral electromagnetic wave guide along which the frequency modulated signal is passed to the crystal.

3,624,403

METHOD ENABLING TO LINEARIZE THE DISPLAY OF A PHOTOELECTRIC MICROSCOPE HAVING A SINUSOIDAL SCANNING

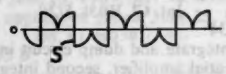
Maurice Koulicovitch, Geneva, Switzerland, assignor to Societe Genevoise D'Instruments de Physique, Geneva, Switzerland

Filed Jan. 13, 1970, Ser. No. 2,524

Claims priority, application Switzerland, Dec. 10, 1969, 3148/69

Int. Cl. H01j *39/12*

U.S. Cl. 250—214 **6 Claims**



This invention relates to the linearization of the display of a photoelectric microscope. According to this method the integrator of the electronic part of the photoelectric microscope is fed by means of a bistable circuit with a current which varies in function of the time.

3,624,404

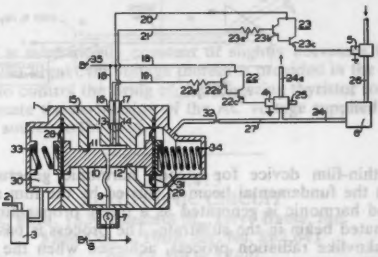
ELECTROPNEUMATIC RELAY VALVE DEVICE USING RADIATION-SENSITIVE MEANS

Claude M. Hines, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Feb. 16, 1970, Ser. No. 11,811

Int. Cl. G01d *5/34*

U.S. Cl. 250—231 **5 Claims**



A manually or pneumatically controlled self-lapping-type valve means whereby a light from a source is transmitted by fiber-optic tube to a movable light-guide-carrying member to be accordingly positioned with respect to a plurality of photoresponsive sensors, to selectively effect energization of a plurality of control circuits. Selective energization of the control circuits effects selective energization of operational magnet valve means to serve specific control functions in a manner as that of a master controller device effecting energization of application and release magnet valves.

3,624,405

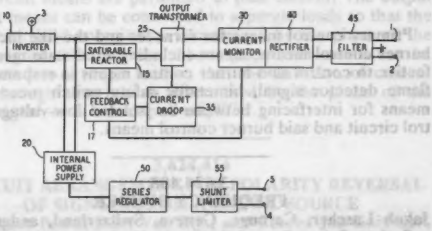
BALANCED CURRENT REGULATOR WITH CURRENT-BALANCE-RESPONSIVE FEEDBACK CONTROL CIRCUIT

John Daniel Bishop, Basking Ridge, Somerset County; Frank Fuller Judd, Madison, Somerset County; Robert Edward Schroeder, Parsippany, Somerset County, and Peter Pentti Untamo, Branchburgh Township, Somerset County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 10, 1970, Ser. No. 53,812

Int. Cl. H02m *3/22*; **G05f** *1/38*

U.S. Cl. 307—33 **6 Claims**



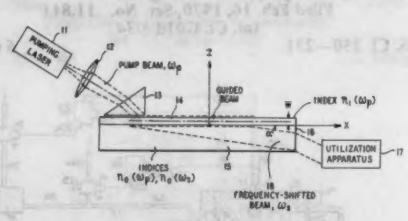
A current regulator to supply two balanced regulated currents of opposite polarity utilizes separate sum and difference current-sensing transformers to generate feedback control signals. These feedback signals control the operation level of a saturable reactor which regulates the drive signal to the output power transformer. Protection circuits responsive to the output voltage prevent it from exceeding predetermined critical levels.

3,624,406

NONLINEAR GENERATION OF A FREELY PROPAGATING BEAM BY A GUIDED BEAM

Raymond John Martin, 516 Edgeworth St., Middlesex Borough, N.J.; Ping King Tien, 19 Lisa Drive, Chatham Township, Morris County, N.J., and Reinhard Ulrich, 4 Imperia Place, Matawan, N.J.

Filed June 25, 1970, Ser. No. 49,614
Int. Cl. H03f 7/04
U.S. Cl. 307—88.3 4 Claims



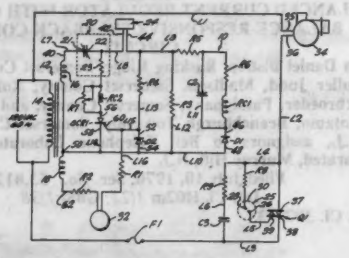
A thin-film device for second harmonic generation in which the fundamental beam is carried by the film and the second harmonic is generated as a freely propagating well-collimated beam in the substrate. The process is basically a Cerenkovlike radiation process, achieved when the optical dispersions of the film and substrate materials provide that the fundamental propagates faster in its guided mode than the second harmonic propagates freely in the substrate. An example is a polycrystalline ZnS film on a ZnO substrate, neither being significantly birefringent.

3,624,407

PRIMARY CONTROL MEANS FOR FURNACES

Frederick T. Bauer, Holland, Mich., assignor to Simicon Company, Holland, Mich.

Filed Oct. 15, 1969, Ser. No. 866,528
Int. Cl. H01h 35/00
U.S. Cl. 307—116 20 Claims



Primary control means for furnaces and the like including burner control means, means including solid state means effective to control said burner control means in response to a flame detector signal, bimetallic safety switch means, and means for interfacing between an isolated low-voltage control circuit and said burner control means.

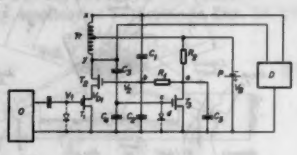
3,624,408

FREQUENCY DIVIDER

Jakob Luscher, Carouge, Geneva, Switzerland, assignor to Societe Suisse Pour L'Industrie Horlogere S.A., Geneva, Switzerland

Filed Oct. 24, 1969, Ser. No. 869,183
Claims priority, application Switzerland, Oct. 25, 1968, 15960/68
Int. Cl. H03b 19/00
U.S. Cl. 307—220 7 Claims

A frequency divider which comprises an amplifier including an impedance in series with a first MOS transistor controlled by the periodic signal whose frequency is to be divided, a DC voltage source for the supply of the amplifier, a second MOS transistor between the impedance and the first transistor controlled by the amplifier output signal and having a threshold voltage level such that it will open whenever



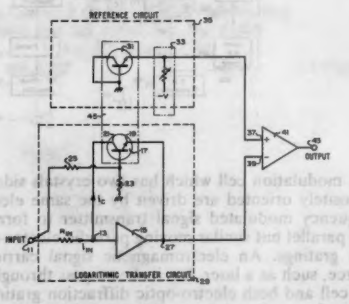
the voltage of the amplifier output signal exceeds a value such that the duration of such excess is substantially equal to the duration of one period of the signal to be divided.

3,624,409

LOGARITHMIC CONVERTER

Jerry B. Folsom, and Robert E. Hetzel, both of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sept. 3, 1970, Ser. No. 69,366
Int. Cl. G06g 7/12
U.S. Cl. 307—229 2 Claims



A logarithmic converter which includes a differential amplifier with one input connected to a logarithmic transfer circuit and another input connected to a temperature compensating reference circuit for producing an output signal from the differential amplifier that is proportional to the logarithm of the ratio of a signal applied to the input of the logarithmic transfer circuit and a reference signal. The logarithmic transfer circuit includes a gain-inverting amplifier having a transistor connected in a feedback arrangement. Resistive elements are connected between the signal input connection, the transistor and a reference potential to improve the linearity of the transfer characteristic.

3,624,410

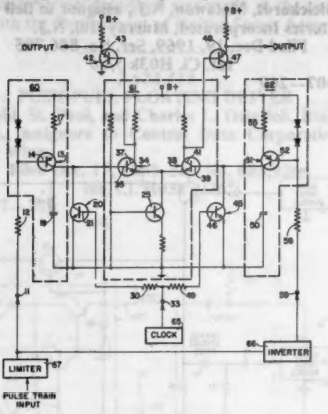
BALANCED INTEGRATE AND DUMP CIRCUIT FOR MEASURING DUTY CYCLE OF A PULSE TRAIN

Eugene J. Bruckert, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 1, 1969, Ser. No. 820,801
Int. Cl. H03k 5/20
U.S. Cl. 307—234 5 Claims

A balanced integrate and dump circuit includes a first integrator, differential amplifier, second integrator and timing circuit, for detecting the presence or absence of pulse train signals in a predetermined time interval, determining whether the pulse train signals are present for greater than a predeter-

mined percentage of the time interval measured and resetting the circuit for the next measurement. Differential comparison of voltages representing the presence and absence of



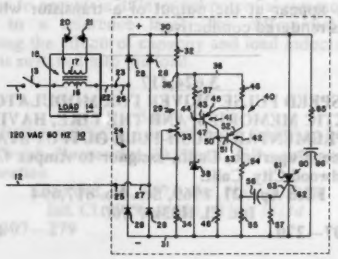
pulses in the measured time interval eliminates errors due to timing period variations, voltage variations, imperfect pulse train signals and circuit operating characteristics.

3,624,411

SWITCHING CIRCUIT FOR DELAYED PHASE FIRING OF A POWER SWITCH

Balthasar H. Pinckaers, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 23, 1970, Ser. No. 21,570
Int. Cl. H03k 17/72
U.S. Cl. 307—252 W 11 Claims



A control system is provided for energizing an electrical load in the form of a spark ignition transformer so that the load is energized for a portion of each half-wave of the applied alternating current voltage. The control circuit utilizes a Zener diode and transistor switch to keep the load deenergized during the major and initial portion of each half-cycle of the applied voltage and then switches the load on during the remaining portion of the applied voltage. The switch, in the form of a silicon-controlled rectifier, allows conduction through the spark ignition transformer primary for a portion of each half-wave of the line voltage.

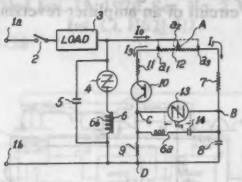
3,624,412

REGULATED AC POWER SUPPLY UTILIZING A BIDIRECTIONAL POWER THYRISTOR

Kazutaka Nishimura, and Hiromi Shimizu, both of Saitama-ken, Japan, assignors to Shindengen Kogyo Kabushiki Kaisha a.k.a. Shindengen Electric Mfg. Co. Ltd., Tokyo-to, Japan

Filed June 23, 1969, Ser. No. 835,355
Claims priority, application Japan, June 25, 1968, 43/53400
Int. Cl. H03k 17/00
U.S. Cl. 307—252 B 8 Claims

An apparatus for controlling the supply of AC power from an AC source to a load by controlling, by the use of a firing circuit including a triggering thyristor, the firing angle of a bidirectional power thyristor connected through the load to the terminals of the AC source, where a bidirectional semiconductor diode, such as three-layer diode, having a voltage-current characteristic in which the terminal voltage



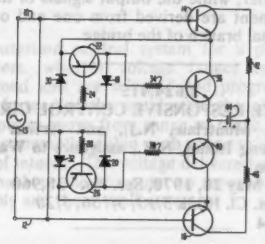
thereof is substantially constant or slightly decreases in excess of the breakover voltage thereof is provided in the firing circuit to control the firing of the triggering thyristor so as to compensate the fluctuation of the AC voltage supplied from the AC source to the load.

3,624,413

ELECTRONIC CIRCUIT

David K. Ford, 1339 Chestnut St., Terre Haute, Ind.

Filed Oct. 1, 1969, Ser. No. 862,841
Int. Cl. H03k 17/00
U.S. Cl. 307—254 8 Claims



A phase or polarity selective electronic control or amplification circuit requiring no reactive components and capable of transforming a single-ended input signal into out-of-phase output signals. The circuit includes switching or gating means to which the input signal is applied and which control one or more output circuit means. When an input signal of a first phase is applied to the switching or gating means, one or more output circuit means are permitted to pass current. When an input signal of another phase is applied, other output circuit means are permitted to pass current. The output circuit means can be connected to separate loads so that the particular load energized is determined by the phase of the input signal. Alternatively, the output circuit means can be connected to a single load so that the direction of current flow through that load is determined by the phase of the input signal, as in a push-pull amplifier.

3,624,414

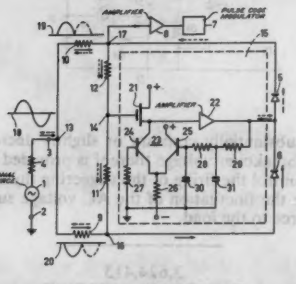
CIRCUIT ARRANGEMENT FOR POLARITY REVERSAL OF SIGNALS FROM A SIGNAL SOURCE

Leonardus Petrus Jozef Van Dijk, and Geerlof Jan Korevaar, Hilversum, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 12, 1969, Ser. No. 884,449
Claims priority, application Netherlands, Dec. 21, 1968, 6818490
Int. Cl. H03k 1/12; H02m 7/00
U.S. Cl. 307—262 7 Claims

A polarity reversal arrangement provided with two series-arranged electronic switching elements, for example, for use in pulse code modulation. freedom

In order to satisfy the strict requirements of polarity reversal at the instants of an alternation of polarity of the signals from a signal source and the requirement of freedom from distortion, the polarity reversal arrangement is provided with a bridge composed of resistors wherein the signal source is connected to one end of a diagonal branch of the bridge and wherein the input circuit of an amplifier reversing the polarity of the input signal is connected to the other end of this diagonal branch and wherein the series arrangement of the two electronic switching elements is included between the ends of the other diagonal branch, the junction of the electronic switching elements being connected to the output circuit of the amplifier, while the output signals of the polarity reversal arrangement are derived from one end of the last-mentioned diagonal branch of the bridge.

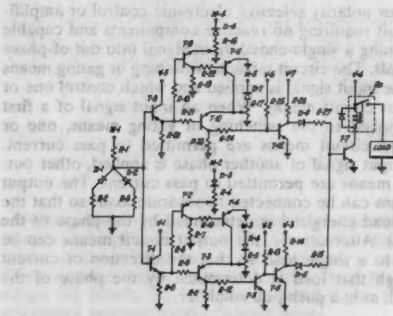


3,624,415

RESISTANCE-RESPONSIVE CONTROL CIRCUIT

Carl E. Atkins, Montclair, N.J., and Arthur F. Cake, Smithstown, Long Island, N.Y., assignors to Wagner Electric Corporation

Filed May 20, 1970, Ser. No. 38,960
Int. Cl. H03k *5/13, 5/156, 5/20*
U.S. Cl. 307—264 **9 Claims**



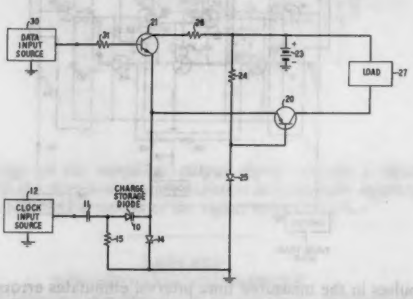
A pulse-generating circuit produces pulses of alternating polarity which are applied to two sets of potentiometers in two separate signal channels, one channel being positive-pulse responsive and the other negative-pulse responsive. When a resistive keying network is connected to the common inputs of the two channels, to the pulse-generating circuit and to ground, the pulse outputs of the two channels combine to maintain a transistor continuously conductive, thereby changing the energization state of a load. Each channel performs a discrimination function for individual components of the keying circuit, and will not generate the necessary output if the values of such components are not within a predetermined range.

3,624,416

HIGH-SPEED GATED PULSE GENERATOR USING CHARGE-STORAGE STEP-RECOVERY DIODE

Werner Bleickardt, Matawan, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 19, 1969, Ser. No. 886,705
Int. Cl. H03k *5/00*
U.S. Cl. 307—269 **3 Claims**



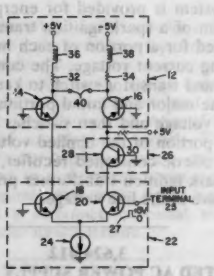
A gated pulse signal generator using a charge-storage step-recovery diode whose recombination time is large in comparison with the period of an alternating current clock source and which is charged during excursions of one polarity of the clock signal and is discharged during excursions of the other polarity of the clock signal through a series path including the emitter collector circuit of a transistor. The transistor through which discharge occurs is part of an emitter-coupled pair of transistors, one of which is connected to receive a gating signal. The gating signal causes either the first or second of the two emitter-coupled transistors to conduct and the short pulses resulting from the discharge of the step-recovery diode only appear at the output of a transistor when that transistor is rendered conductive.

3,624,417

HIGH-SPEED PULSE DRIVER FOR MODULATORS, MAGNETIC MEMORIES, AND THE LIKE, HAVING A COMPLEMENTARY PUSH-PULL OUTPUT STAGE

Tich T. Dao, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 21, 1969, Ser. No. 817,694
Int. Cl. H03k *17/00*
U.S. Cl. 307—270 **4 Claims**



An output driver stage employs a pair of push-pull complementary transistor switches which are driven in phase, e.g., both off or both on. Two driving currents are provided to the output stage which currents are truly complementary, e.g., equal in phase with one sinking and the other sourcing. Reversed current flow is provided in one of the branches of the output stage by means of a "dummy" transistor stage and a constant current source, whereby the voltage output of the complementary transistor switches as seen between the collectors thereof will range from zero to double the possible breakdown voltage of each transistor switch.

Thus the invention simulates a center tap transformer circuit, but further provides large bandwidth characteristics down to DC.

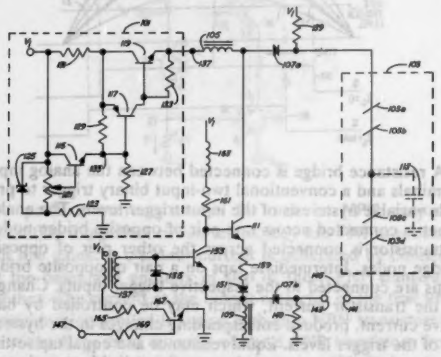
The invention herein described was made in the course of a contract with the Department of United States Army.

3,624,418

PUSH-PULL FLOATING DRIVER

Paul B. Kohl, St. Paul, and Charles L. Osterloh, Blaine, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Dec. 17, 1969, Ser. No. 885,926
Int. Cl. H03k 3/26
U.S. Cl. 307—270 14 Claims



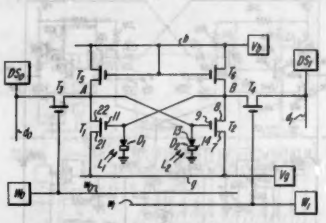
An electronic circuit using the characteristic of a pair of inductors to provide a differential potential symmetrical with respect to a reference level. The differential potential minimizing the effects of capacity and load inductance when current is switched into the load.

3,624,419

BALANCED OPTICALLY SETTABLE MEMORY CELL

Walter Frank Kosonocky, Skillman, N.J., assignor to RCA Corporation

Filed Oct. 19, 1970, Ser. No. 81,966
Int. Cl. H03k 3/286; G11c 11/34
U.S. Cl. 307—279 7 Claims



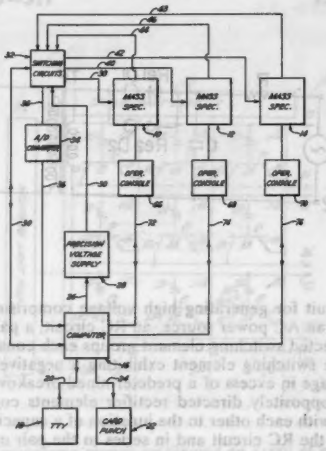
An optically settable memory cell includes two MOS transistors each having a gate cross-coupled to the drain of the other transistor to provide a bistable circuit. Each transistor has a drain extending over an area of the substrate to form a photodiode. Bias potential is applied to the sources as well as the drains of the two transistors to render them nonconductive and to charge both photodiodes to the same reverse bias potential. The application of potential to the drains is interrupted while a differential input light signal is applied to the photodiodes to cause an unequal discharging of the photodiodes. Potential is then removed from the sources and restored to the drains, whereby the transistor having its gate connected to the photodiode having the greater charge is rendered conductive, and the transistors then store an optically determined information bit.

3,624,420

CONTROL SYSTEM FOR A PLURALITY OF MASS SPECTROMETERS

Ronald L. Krutz, Irwin; Alexander P. Lezark, Monroeville, and Alvin B. Marcus, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 12, 1970, Ser. No. 2,337
Int. Cl. H02j 3/14
U.S. Cl. 307—38 9 Claims



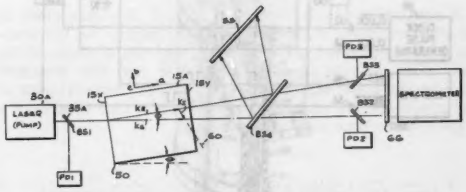
A computerized control system for a plurality of mass spectrometers, wherein voltage ranges corresponding to predetermined ions are selected and programmed into the computer. Instead of the usual scan, the computer drives a power supply to move from range to range, and to vary the voltage incrementally within each range to accurately define the peaks of interest. The voltage delivered at the spectrometer is fed back to the computer to serve as a check on the power supply and the overall system.

3,624,421

TUNABLE RAMAN LASER

Richard H. Pantell, and Harold E. Puthoff, both of Menlo Park, Calif., assignors to Research Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 619,647, Mar. 1, 1967, now abandoned. This application June 11, 1970, Ser. No. 45,440
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 11 Claims

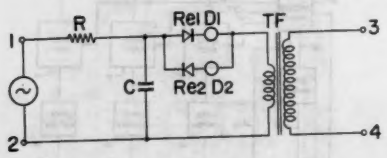


A continuously tunable laser arrangement consisting of an optical cavity, containing a Raman-type material, which is infrared active. A pump source of intense coherent radiation is employed to excite an idler frequency, which is one of the natural infrared modes of the material. The angle between the cavity axis and the direction of radiation from the pump source is adjustable to control the actual frequency of the excited idler frequency and thereby control the frequency of output radiation representing an output signal.

3,624,422
CIRCUIT GENERATING HIGH VOLTAGE

Masanari Suzuki, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1970, Ser. No. 30,778
Claims priority, application Japan, Apr. 23, 1969, 44/31830
Int. Cl. H03k 3/00
U.S. Cl. 307—108 1 Claim

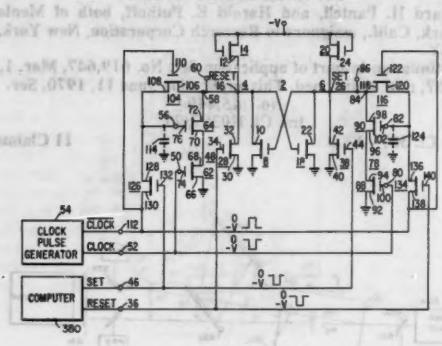


A circuit for generating high voltage comprising in combination an AC power source, an RC circuit, a pair of parallel connected switching element groups each consisting of at least one switching element exhibiting a negative resistance at a voltage in excess of a predetermined breakover voltage, pair of oppositely directed rectifier elements connected in parallel with each other to the junction of a capacitor and resistor of the RC circuit and in series to the pair of switching element groups respectively, and a transformer for inducing high voltage across its secondary. Larger output power is obtained.

3,624,423
CLOCKED SET-RESET FLIP-FLOP

Fred Borgini, Willingboro, N.J., assignor to RCA Corporation

Filed June 3, 1970, Ser. No. 42,941
Int. Cl. H03k 3/26
U.S. Cl. 307—279 10 Claims

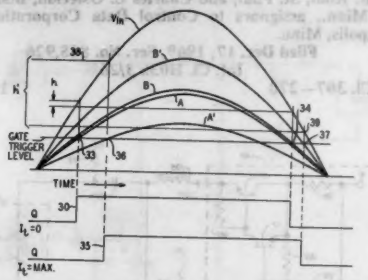


Successive clock pulses applied to the clock pulse terminals of a flip-flop cause it successively to change state. A set pulse or reset pulse may be applied to the flip-flop concurrently with a clock pulse which tends to place the flip-flop in a state different than the state intended by the set or reset pulse. The present circuit includes means responsive to the set or reset pulse for preventing the clock pulse from having any effect on the flip-flop. The means may comprise a logic gate to which the clock pulses are applied, storage means for priming the gate when charged, and means responsive to a set or reset pulse for discharging the storage means.

3,624,424
VARIABLE-HYSTERESIS BINARY TRIGGER CIRCUIT

Sun Chun Ping, Morristown; Frank Fuller Judd, Madison; Jan Mark Lieberman, Lake Hiawatha, and Helmut Wilhart, Whippany, all of N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,150
Int. Cl. H03k 3/295, 19/34, 19/36
U.S. Cl. 307—290 7 Claims

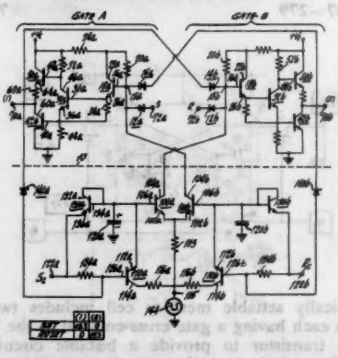


A resistance bridge is connected between the analog input terminals and a conventional two-input binary trigger to provide variable hysteresis of the input trigger levels. The analog input is connected across one pair of opposite bridge nodes; a transistor is connected across the other pair of opposite bridge nodes. Intermediate taps on a pair of opposite bridge arms are connected to the respective trigger inputs. Changes in the transistor current, which may be controlled by base drive current, produce corresponding changes in the hysteresis of the trigger levels. Equal resistance and equal tap setting of opposite bridge arms produces symmetrical hysteresis control.

3,624,425
CAPACITANCE MULTIPLICATION NETWORK

William C. Blumenstein, Cinnaminson, N.J., assignor to RCA Corporation

Filed July 9, 1965, Ser. No. 470,869
Int. Cl. H03k 3/12, 3/26
U.S. Cl. 307—291 10 Claims



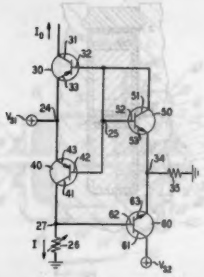
A steering network employing first and second clock switching transistors having their emitters connected in common to a clock pulse source with first and second capacitors each connected between a different base electrode and a point of reference potential is described. In addition, clock signal responsive means provides charge paths for the capacitors under the selective control of input signal responsive means.

3,624,426

CURRENT SOURCE FOR SEMICONDUCTOR CIRCUITS

Veikko Reynold Saari, Matawan Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 5, 1970, Ser. No. 77,815
Int. Cl. G05f 1/10
U.S. Cl. 307—297 6 Claims



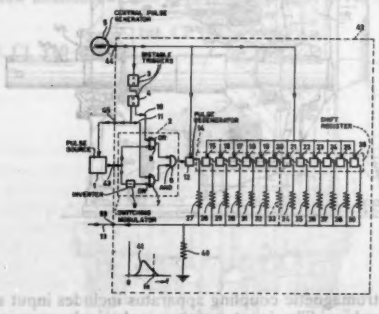
A positive current source for use in NPN majority monolithic integrated circuit technology has PNP transistors with low gains. A constant current is generated by connecting the bases and emitters of two of these PNP transistors together. The current at the output collector of the first PNP transistor is controlled by using high-gain NPN transistors to divert the large base currents of these PNP transistors from the resistance in the collector of the second PNP transistor while coupling the voltage across this resistance to the bases of both PNP transistors.

3,624,427

PULSE TRANSMISSION DEVICE INTEGRATED IN A SEMICONDUCTOR BODY

Else Carel Dijkmans, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 13, 1970, Ser. No. 19,437
Claims priority, application Netherlands, Mar. 22, 1969, 6904458
Int. Cl. H03k 5/00, 3/26
U.S. Cl. 307—303 5 Claims



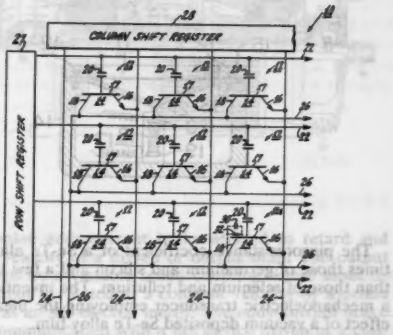
A pulse transmission device integrated in a semiconductor body comprising an output filter is formed from a shift register having a number of shift register elements which are coupled to a combination device through respective attenuation networks. Each shift register element and its respective attenuation network is formed as a topologic unit with the topologic units distributed in parallel rows. Various connections are made through tracks. The use of topologic units minimizes mutual cross talk phenomena both capacitive and galvanic in nature.

3,624,428

ELECTRIC SIGNAL PROCESSING CIRCUIT EMPLOYING CAPACITIVELY SCANNED PHOTOTRANSISTOR ARRAY

Paul Kessler Weimer, Princeton, and Frank Vanloon Shallcross, Princton Junction, both of N.J., assignors to RCA Corporation

Filed Mar. 20, 1970, Ser. No. 21,250
Int. Cl. H03k 17/00
U.S. Cl. 307—311 12 Claims



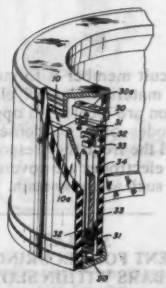
A signal processing circuit employing an array of photodetector elements, with each element including a phototransistor having a capacitor coupled to the base region. The base-collector junction integrates incident light flux in response to an electromagnetic input, while the emitter-base diode serves as a switch when the element is sampled, to provide an electric output representative of the integrated light. The capacitor provides charge storage during the period between light flux integration and sampling.

3,624,429

FREE FLOODED DEEP SUBMERGENCE TRANSDUCER

John W. Behrendt, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 25, 1968, Ser. No. 747,517
Int. Cl. H04r 17/00
U.S. Cl. 310—9.1 1 Claim



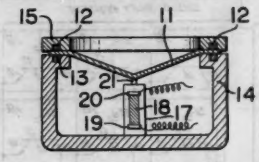
A right cylinder of piezoelectric ceramic is centered in a hollow annulus. The annulus is filled with high dielectric oil so that hydrostatic pressure regardless of magnitude is perfectly equalized inside and outside the annulus to obviate all pressure gradiants. The annulus comprises two coaxial rubberlike tubes, transparent to acoustic energy, and attached with simple hose clamps to metal rings at the ends of the cylinder.

3,624,430

SELENIUM-TELLURIUM TRANSDUCER EMPLOYING PIEZORESISTANCE EFFECT

Yoshihiko Mizushima, Takagi; Ochi Toru, Osamu, and Masahiro Seki, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Sept. 18, 1970, Ser. No. 73,431
Claims priority, application Japan, Sept. 22, 1969, 44/74690
Int. Cl. H01v 7/00
U.S. Cl. 310—9.5 2 Claims



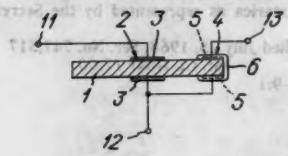
The piezoresistance coefficient of a Se-Te alloy is 50–60 times those of germanium and silicon and a few times higher than those of selenium and tellurium. The invention provides a mechanoelectric transducer employing the piezoresistance effect of a vacuum deposited Se-Te alloy film.

3,624,431

COMPOSITE CIRCUIT MEMBER INCLUDING AN ELECTROSTRICTIVE ELEMENT AND CONDENSER

Jitsuro Machida, Sawa-gun, and Takashi Tanaka, Takasaki-shi, both of Japan, assignors to Taiyo Yuden Kabushiki Kaisha, Tokyo, Japan

Filed July 11, 1969, Ser. No. 840,945
Claims priority, application Japan, July 12, 1968, 43/48417
Int. Cl. H01v 7/00
U.S. Cl. 310—9.5 8 Claims



A composite circuit member is formed of a base plate of an electrostrictive material. Control elements for the electrostrictive operation are located on opposite surfaces of the base plate. Electrodes of a condenser are also mounted thereon. To control the frequency response characteristics of the condenser, the electrodes are covered with a coating of a high-polymer resin such as epoxy resin.

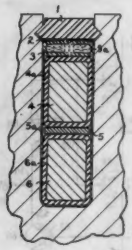
3,624,432

ARRANGEMENT FOR SECURING ELECTRICAL CONDUCTOR BARS WITHIN SLOTS TO PREVENT VIBRATION

Karl Merz, Mannheim-Waldhof, Germany, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Dec. 19, 1969, Ser. No. 886,502
Int. Cl. H02k 9/00
U.S. Cl. 310—53 13 Claims

A dynamoelectric machine including an arrangement for securing conductor bars in their respective slots in the iron body thereof for preventing conductor vibration. A tubular member is located in each slot and extends parallel with the conductor bar. The tubular member is made from an elastic nonmagnetic material and is connected to a fluid pressure source by means of which the fluid pressure established within the tubular member is imparted to the conductor bar. The fluid pressure within the tubular members may be static,



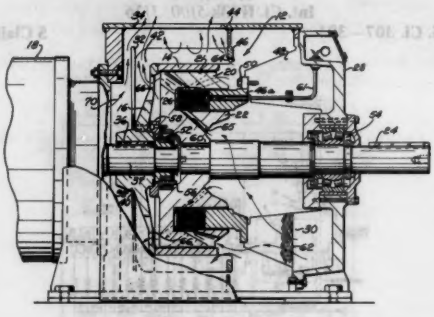
i.e. noncirculating, or the pressurized fluid, either liquid or gas, may be made to circulate through the tubular members, in which case a cooler unit may also be incorporated in the circulating system so as to remove heat developed in the slots by the conductor bars and which is transferred to the fluid.

3,624,433

COOLING SYSTEM FOR AN ELECTROMAGNETIC COUPLING APPARATUS

Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed June 24, 1970, Ser. No. 49,261
Int. Cl. H02k 9/00
U.S. Cl. 310—60 9 Claims



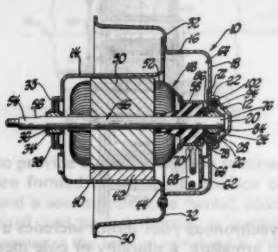
An electromagnetic coupling apparatus includes input and output members. The input member is drivingly connected with a rotatable annular inductor means and the output member is drivingly connected with rotatable pole means. The rotatable pole means and annular inductor means have a cooperative airgap relation. Field means is associated with the annular inductor means and pole means and is energizable to cause flux to traverse therebetween so that a predetermined amount of torque is transmitted from the input to the output member upon rotation of the input member. Baffle means is provided to improve the cooling efficiency of the electromagnetic coupling apparatus by reducing the amount of air heated by the electromagnetic coupling from recirculating through the electromagnetic coupling.

3,624,434

BEARING SUPPORT ASSEMBLY FOR DYNAMOELECTRIC MACHINES AND A METHOD OF MANUFACTURE THEREFOR

Gene L. Dafler, New Lebanon, and Wayne V. Fannin, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1970, Ser. No. 91,392
Int. Cl. H02k 5/16
U.S. Cl. 310—90 5 Claims



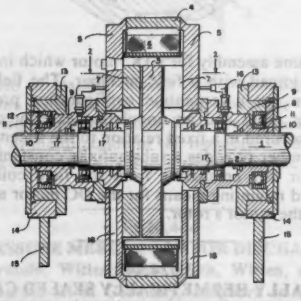
In a preferred form, a bearing support assembly for dynamoelectric machines carries one end of the machine shaft so as to limit axial shaft movement. The shaft end is rotatable in a bearing which is axially confined on the shaft by a thrust collar. First and second annular retaining springs are mounted in the end of one of the housing case parts so as to provide support for opposite sides of the bearing. The method of assembling the shaft to the case part includes mounting the first retaining spring, the bearing, and the thrust collar to the shaft end and mounting the second retaining spring within the case part. The shaft is inserted axially into the case part so that the bearing initially engages the second retaining spring. The shaft end is pressed further until the first retaining spring snaps into place within the case part, whereupon the bearing support assembly is completed and the shaft end is supported therein with a predetermined axial end play.

3,624,435

DISC-TYPE INDUCTOR EDDY CURRENT MACHINE

James E. Bunner, Erie, Pa., assignor to General Electric Company

Continuation of application Ser. No. 754,598, Aug. 28, 1968, now abandoned. This application July 29, 1970, Ser. No. 64,110
Int. Cl. H02k 49/02
U.S. Cl. 310—93 5 Claims



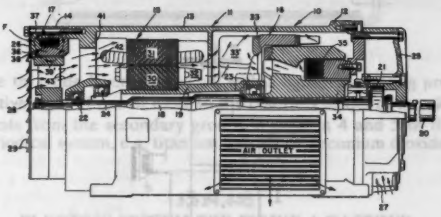
A disc-type inductor eddy current machine having pole pieces or teeth on the opposite sides of a spinning disc, the teeth being specially arranged to provide increased torque at less than the optimum speed of rotation of the disc.

3,624,436

AIR-COOLED ELECTROMAGNETIC BRAKE

Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Nov. 13, 1970, Ser. No. 89,329
Int. Cl. H02k 49/04
U.S. Cl. 310—93 5 Claims



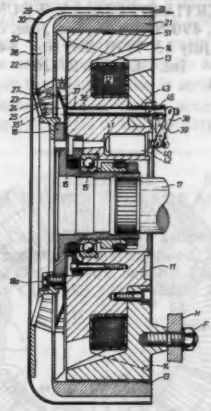
An air-cooled eddy-current brake utilized to retard and control the velocity of a driven or output shaft. The output shaft is driven by a variable speed coupling whose input or driving member is rotated at a constant velocity by a prime mover such as an AC electric motor. The eddy-current brake is in fluid communication with a fan device driven at a constant speed by the prime mover and thereby receives a substantially constant supply of cooling air regardless of the velocity of the output shaft.

3,624,437

EDDY CURRENT BRAKE

Alfred Hoyler, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuffgart, Germany

Filed Jan. 18, 1971, Ser. No. 107,364
Int. Cl. H02k 49/04
U.S. Cl. 310—93 10 Claims



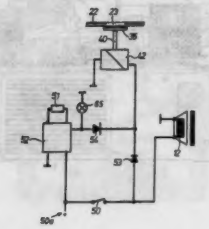
An eddy current brake wherein a cupped rotor surrounds the coil and the pole shoes of the stator and is provided with inlets for admission of cool air when the coil is excited to produce in the rotor eddy currents with attendant generation of heat. The rotor has blades which serve to draw air into an internal rotor chamber and to circulate such air along the surfaces of the stator and rotor when the coil is excited. The inlets are controlled by a valve which is mounted in the stator and is movable between closed and open positions by actuating means which are also mounted in the stator. Such actuating means comprises electromagnets or temperature-responsive devices which employ heat-expandible elements.

3,624,438

AIR-COOLED EDDY CURRENT BRAKE

Alfred Hoyler, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 29, 1971, Ser. No. 111,033
Claims priority, application Germany, Feb. 5, 1970, P 20 05 139.2
Int. Cl. H02k *49/04*
U.S. Cl. 310—93 14 Claims



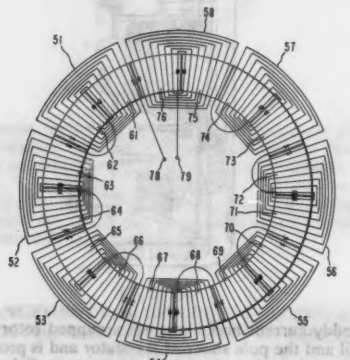
An eddy current brake wherein the rotor is braked and heated in response to energization of a coil in the stator. The rotor has a chamber which can receive cool atmospheric air by way of inlets machined into the rotor and sealable from the chamber by a valve which is carried by the stator. The rotor is further provided with blades which draw air into the chamber and expel such air into predetermined paths wherein the air exchanges heat with the stator and rotor when the valve is open. The opening of valve is controlled by electromagnets, thermostats or cylinder and piston units which cause the valve to open in response to energization of the coil and insure that the valve remains open for a predetermined or variable interval of time following deenergization of the coil to thus guarantee further cooling of the stator and rotor upon termination of a braking action.

3,624,439

ELECTROMECHANICAL ENERGY CONVERTER WITH LOW-INERTIA SPECIALLY WOUND COIL

Kiyoshi Tokutomi, 490 N. 8th St., San Jose, Calif.

Filed July 13, 1970, Ser. No. 54,190
Int. Cl. H02k *21/26*
U.S. Cl. 310—154 18 Claims



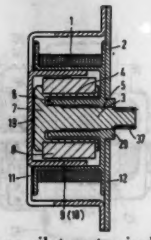
An electromechanical energy converter with low-inertia, coreless, nonmagnetic coils rotating in fields of high-magnetic flux provided by pairs of magnetic rows having connected like poles facing connected unlike poles provides increased output energy for a given input energy.

3,624,440

POLARIZED SYNCHRONOUS PILOT MOTOR

Hans-Peter Latussek, Feucht, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 11, 1970, Ser. No. 10,434
Claims priority, application Germany, Feb. 13, 1969, P 19 07 137.5
Int. Cl. H02k *21/00*
U.S. Cl. 310—162 6 Claims



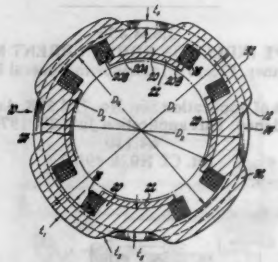
Polarized synchronous pilot motor includes a rotary permanent magnet armature, a plurality of pole members of alternating polarity coaxially surrounding the armature, stator pole plates supporting the armature at both ends thereof, a stator coil for exciting the armature being disposed coaxially thereto, the stator coil being carried by a coil carrying member formed with projections of plastic material extending coaxially to the armature and serving directly as bearing support for the armature.

3,624,441

FIELD FRAME ASSEMBLY FOR DIRECT CURRENT DYNAMOELECTRIC MACHINES

Max E. Todd, and John V. Hellmann, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed June 10, 1970, Ser. No. 45,040
Int. Cl. H02k *1/00*
U.S. Cl. 310—179 2 Claims



A field frame assembly for a DC motor which includes two end frames joined with a field member. The field member cross section has a serpentine configuration providing integral salient poles and an undulating exterior contour. A field coil is secured in a fixed relation to the salient poles and the field member provides a substantially constant cross section path for flux emanating from the field coil. The end frames afford mounting means for the DC motor and bearing support for the motor's rotor.

3,624,442

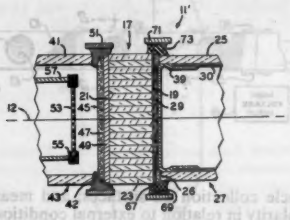
INDIVIDUALLY HERMETICALLY SEALED CATHODE-RAY TUBES CONNECTED BY FIBER OPTICS ARRAY

Harry E. Smithgall, and Elmer O. Stone, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated

Filed Dec. 18, 1969, Ser. No. 886,109
Int. Cl. H01j *31/00, 31/08, 29/00*
U.S. Cl. 313—2 3 Claims

An improved scan-conversion device is provided in the form of a combination of two separate cathode-ray tube sec-

tions utilizing a common faceplate portion therebetween. A method of fabrication embodies peripherally sealing an envelope funnel to a first surface of the common faceplate, whereupon a cathodoluminescent screen is formed. Upon positioning and sealing an electron gun in the funnel portion of the first envelope, the envelope is evacuated, sealed and



processed to provide a display-forming section. A target electrode is then formed on the outer surface of the common faceplate, and a second envelope funnel, having an electron gun positioned and sealed therein, is peripherally bonded thereto; whereupon the second envelope is evacuated, sealed and processed to provide a display-reading section oriented to directly cooperate with the display-forming section.

3,624,443

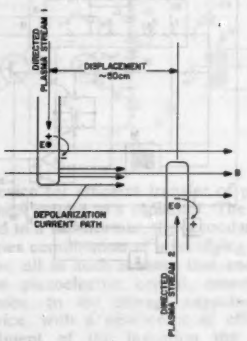
TWO-PLASMA GUN MAGNETIC FIELD LOADING METHOD

Jay E. Hammel, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission

Continuation-in-part of application Ser. No. 766,417, Oct. 10, 1968, now abandoned. This application Aug. 31, 1970, Ser. No. 68,579

Int. Cl. H05h *1/02*

U.S. Cl. 313—161 **4 Claims**



A method of loading plasma into a containment device. Two plasma streams are directed into the containment geometry from opposite sides. The streams are offset from each other in the direction of the magnetic field so that their interaction causes the streams to stop within the containment geometry.

3,624,444

LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

Frank Berthold, Witten; Rolf Groth, Witten, and Rudiger Jost, Haaren, all of Germany, assignors to U. S. Philips Corporation, New York, N.Y.

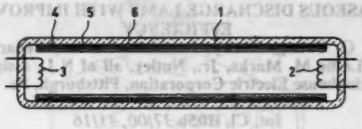
Filed July 1, 1970, Ser. No. 51,576

Claims priority, application Germany, July 5, 1969, P 19 34 299.5

Int. Cl. H01j *61/35*

U.S. Cl. 313—221 **4 Claims**

A low-pressure mercury vapor discharge lamp, having a glass envelope, whose inner side is provided with a layer of luminescent material and a light-transmitting layer of conducting tin oxide provided between this luminescent layer and the glass envelope.



The tin oxide layer is provided with a light-transmitting protective layer of one or more of the colorless oxides of the elements from the secondary groups in column 4 and 5 of the periodical system, e.g. titanium dioxide or zirconium dioxide.

3,624,445

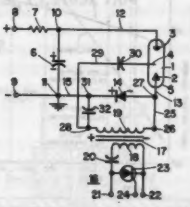
ELECTRIC SYSTEM FOR FIRING A GASEOUS DISCHARGE DEVICE

Ralph L. Cadwallader, Concord, Mass., assignor to EG&G, Inc., Bedford, Mass.

Filed May 8, 1970, Ser. No. 35,754

Int. Cl. H05b *41/19*

U.S. Cl. 315—241 **8 Claims**



This invention relates to circuits for initiating discharge of gaseous discharge devices having a trigger electrode. These circuits are arranged to apply a high-voltage trigger pulse between a trigger electrode and a main electrode of the discharge device and simultaneously to add a high-voltage pulse derived from the trigger pulse in series with the voltage on the main discharge capacitor to accelerate breakdown between the main electrodes of the discharge device.

3,624,446

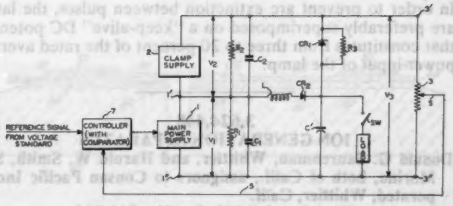
ELECTRICAL ENERGY STORAGE AND FLASHING APPARATUS

Jacob Goldberg, Cambridge, Mass., assignor to United States Scientific Instruments, Inc., Watertown, Mass.

Filed Oct. 6, 1969, Ser. No. 863,964

Int. Cl. H05b *37/00*; H02m *3/18*

U.S. Cl. 315—241 **14 Claims**



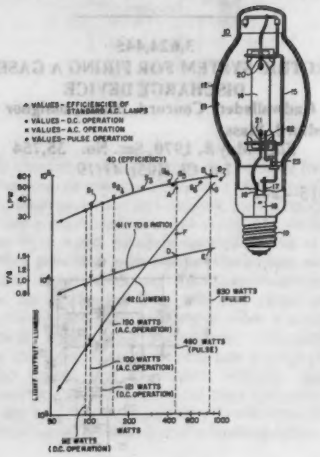
This disclosure relates to electrical energy storage apparatus in which a novel clamp supply voltage and feedback control is provided in a series resonant charging energy storage system to prevent the storage elements from developing voltages that exceed a predetermined voltage and that

would normally be produced by the action of the series resonant charging.

3,624,447
METHOD OF OPERATING A HIGH-PRESSURE GASEOUS DISCHARGE LAMP WITH IMPROVED EFFICIENCY

Robert G. Young, Nutley; Daniel A. Larson, Cedar Grove, and Leslie M. Marks, Jr., Nutley, all of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 25, 1969, Ser. No. 836,316
Int. Cl. H05b *37/00, 41/16*
U.S. Cl. 315—246 **6 Claims**



The efficiency of a conventional high-pressure gaseous discharge lamp, such as a 400 watt mercury-vapor lamp, is increased by pulse-operating the lamp at power loadings which are higher than the average rated power input of the lamp. The high-power pulses are of such magnitude and duration that the resultant average power input does not exceed the power loading for which the lamp is designed and rated. This is achieved by generating a series of high-voltage pulses with a suitable circuit and applying the pulses to the lamp electrodes. Optimum results in the case of conventional high-pressure mercury-vapor discharge lamps having ratings of from 100 to 1,000 watts are obtained with pulses that have a magnitude of from 60 to 600 volts, are 0.2 to 5 milliseconds in duration and have a repetition rate of from 50 to 500 pulses per second.

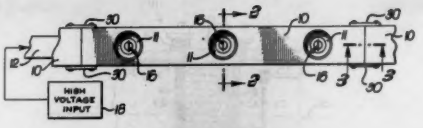
In order to prevent arc extinction between pulses, the latter are preferably superimposed on a "keep-alive" DC potential that constitutes from three to 20 percent of the rated average power input of the lamp.

3,624,448
ION GENERATION APPARATUS

Donald G. Saurenman, Whittier, and Harold W. Smith, San Marino, both of Calif., assignors to Consan Pacific Incorporated, Whittier, Calif.

Filed Oct. 3, 1969, Ser. No. 863,522
Int. Cl. H05b *3/00*
U.S. Cl. 317—4 **15 Claims**

The invention concerns ion generation and dispensing apparatus having module form with an electrically conductive bus to which groups of ion generating radiants or clusters are connected, the modules being constructed for connection in series; the provision of means to dispense vapor in air flow created by the flow of such ions; means to use such ions to

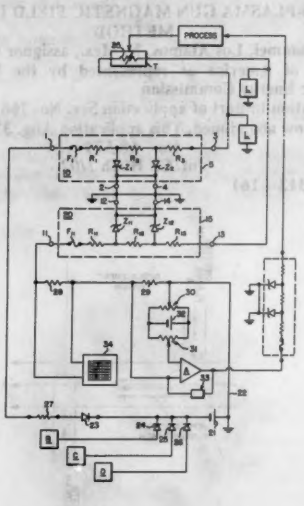


effect particle collection on surfaces; and means to control such ion polarity in relation to external conditions.

3,624,449
INTRINSICALLY SAFE TRANSMITTER SYSTEM

Martin J. Morgan, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Aug. 24, 1970, Ser. No. 66,372
Int. Cl. H02h *3/20*
U.S. Cl. 317—16 **10 Claims**



A DC regulator-type transmitter in a hazardous area is connected by a pair of electrical barriers to a DC source in a safe area to define a closed DC loop in which the current is controlled by the transmitter in proportion to a variable condition in the hazardous area. One barrier limits the voltage with respect to ground of metering resistance in the safe area of the loop connected to the source side grounded in the safe area. The other barrier limits the source voltage with respect to ground. Voltage drop across the metering resistance provides a measure of the variable condition.

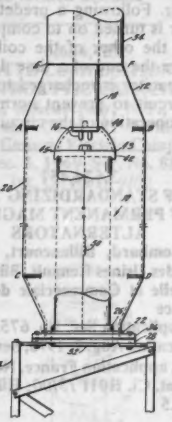
3,624,450
METAL ENCLOSED GAS INSULATED LIGHTNING ARRESTER

Howard W. Graybill, Greensburg, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Apr. 24, 1970, Ser. No. 31,589
Int. Cl. H02h *1/04*
U.S. Cl. 317—62 **4 Claims**

Sealing rings hermetically seal the opposite ends of a metal enclosed arrester housing to prevent leakage of pres-

surized, high dielectric gas inside the arrester, and a frangible diaphragm is included to permit exhaust of hot gases into the



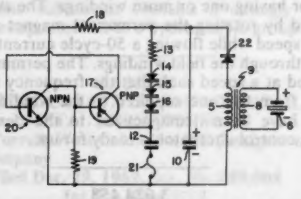
atmosphere rather than into the pressurized gas surrounding the unit.

3,624,451

EFFICIENT LOW VOLTAGE PIEZOELECTRIC POWER SUPPLY

Godfrey R. Gauld, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.

Filed May 4, 1970, Ser. No. 34,239
Int. Cl. F23g 7/02
U.S. Cl. 317—80 2 Claims



An electric device for efficient transfer of power from a piezoelectric crystal source to a capacitor. The piezoelectric crystal is coupled to a transformer, the secondary of which is shunted by a series combination of a rectifying device and a storage capacitor, all in such manner that energy is transferred from the piezoelectric crystal, essentially a first capacitance device, to the storage capacitor, a second capacitance device, with a new order of efficiency. In a specific embodiment of the invention the piezoelectric crystal and two capacitances are associated with biasing networks and a transistorized switching circuit and a firing circuit in such manner that the energy transferred into the storage capacitor is utilized to fire a squib.

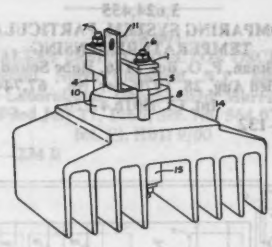
3,624,452

HEAT SINK MOUNTINGS FOR RECTIFIER DEVICES

John M. Hayward, and Christopher E. Pilkington, both of London, England, assignors to Westinghouse Brake & Signal Company Limited, London, England

Filed Nov. 3, 1969, Ser. No. 873,383
Claims priority, application Great Britain, Nov. 26, 1968, 55,964/68
Int. Cl. H01l 1/12
U.S. Cl. 317—100 6 Claims

A mounting for a semiconductor device includes a leaf spring capable of producing a predetermined pressure at a point along the length thereof responsive to a given deflection of the point, the spring bearing on a convex surface of a block and the semiconductor device being clamped between the block and a base member in the form of a heat sink. Variation in the clamping pressure is provided by tensioning screws and a gap between the leaf spring and the surface of



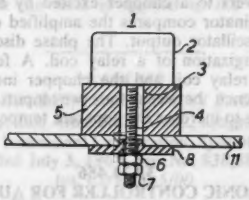
the block is accessible during the application of tension so that a predetermined deflection of the spring can be gauged and a selected pressure thus applied to the device.

3,624,453

TRANSISTOR DEVICES AND AMPLIFIERS

Ernest W. Rogers, Horley, and Lewis P. Learney, Crawley Down, both of England, assignors to Redifan Limited, London, England

Filed May 19, 1970, Ser. No. 38,727
Claims priority, application Great Britain, July 14, 1969, 35,345/69
Int. Cl. H05k 1/04
U.S. Cl. 317—101 CC 10 Claims



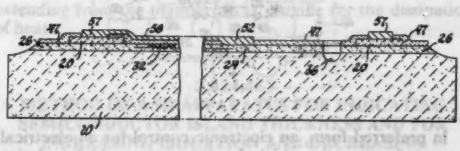
An integral transistor and emitter resistor assembly in which a hollow, cylindrical, low-reactance, resistive element is located around the transistor mounting stud for connection between the transistor base electrode and chassis. Optional insulating sleeve and washer members permit the resistor to be mounted above or below the chassis.

3,624,454

MESA-TYPE SEMICONDUCTOR DEVICE

Allen R. Adkinson, Sharpsville; Richard G. Carter, Sharpsville, and Glen E. Harland, Jr., Kokomo, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

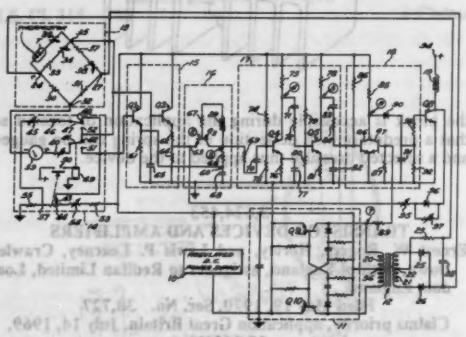
Filed Sept. 15, 1969, Ser. No. 857,770
Int. Cl. H01l 19/00
U.S. Cl. 317—101 A 9 Claims



A mesa-type semiconductor device having integrally formed circuit components thereon including resistors. One form of this device includes, on a monolithic chip or wafer, a mesa-type Darlington amplifier having etch moats. Bleeder resistors are integrally formed between the etch moats eliminating several wire bonds which would be necessary to

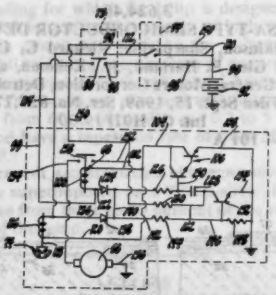
interconnect the resistors with the active regions of the wafer.

3,624,455
SIGNAL-COMPARING SYSTEM, PARTICULARLY FOR TEMPERATURE-SENSING
Melvin W. Hillman, P. O. Box 1186, Hobe Sound, Fla.
Filed Aug. 28, 1970, Ser. No. 67,744
Int. Cl. H01h 47/26
U.S. Cl. 317—132 25 Claims



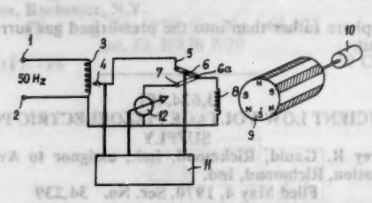
A temperature-sensing system having a Thermistor in a Wheatstone bridge whose output is compared against a reference potentiometer. The two signals are applied through emitter followers to a chopper excited by an oscillator. A phase discriminator compares the amplified chopper output against the oscillator output. The phase discriminator controls the energization of a relay coil. A feedback circuit between the relay coil and the chopper increases the apparent difference between the two input signals to the chopper, so as to increase the apparent temperature error.

3,624,456
ELECTRONIC CONTROLLER FOR AUTOMATIC LEVELING SYSTEM
James O. Elliott, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 13, 1970, Ser. No. 19,307
Int. Cl. H01h 47/32, 47/18
U.S. Cl. 317—141 S 4 Claims



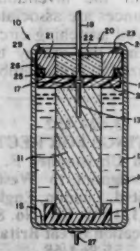
In preferred form, an electronic control for an electrically operated automatic vehicle leveling system which includes a relay coil and a solenoid operated valve coil that are both connected to one terminal of a three terminal solid-state switching device in the form of a pair of transistors in a Darlington configuration. The base emitter junction of the Darlington pair is connected to a RC timing circuit through a low cost switching transistor. An undamped height sensor switch connects the charging circuit to the positive terminal of a vehicle battery and the switching transistor closes to charge a capacitor of the RC circuit from a negative reference voltage to a positive turn on voltage at the base of the Darlington pair. Following a predetermined time delay the Darlington pair is turned on to complete an energization circuit for one or the other of the coils. If the undamped switch opens before the end of a time delay cycle, the positive side of the capacitor is recharged to the battery voltage through a reset circuit to prevent normal road movements from affecting the operation of the circuit.

3,624,457
METHOD OF STANDARDIZING THE OUTPUT VOLTAGE OF PERMANENT MAGNET CONTROL ALTERNATORS
Claude-Edmond Lombard, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, France and Societe Industrielle et Commerciale des Automobiles Peugeot, Paris, France
Continuation of application Ser. No. 675,979, Oct. 17, 1967. This application Aug. 7, 1970, Ser. No. 62,124
Claims priority, application France, Nov. 9, 1966, 83148
Int. Cl. H01f 13/00; H02p
U.S. Cl. 317—157.5 4 Claims



This application relates to a method of standardizing tachometric control alternators by demagnetizing to a standard level the permanent magnets of the armature. The armature containing permanent magnets revolves in or in front of a stator having one or more windings. The standardization is effected by rotating the permanent magnet armature at a standard speed while flowing a 50-cycle current of increasing intensity through the field windings. The permanent armature is revolved at a speed such that the frequency it generates is different from the one supplied to the windings. When the magnets have been demagnetized to the desired standard level, the control alternator is ready for use.

3,624,458
CAPACITOR HAVING A GLASS-TO-METAL SEAL AND AN ELASTOMERIC SEAL
John D. Howell, Lake Park, Fla., and Stanley L. Krasienko, Indianapolis, Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Continuation-in-part of application Ser. No. 721,234, Apr. 15, 1968, now Patent No. 3,515,951, dated June 2, 1970. This application Nov. 26, 1969, Ser. No. 880,393
Int. Cl. H01g 9/06, 9/10
U.S. Cl. 317—230 15 Claims



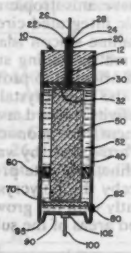
A resilient means cooperatively associated with the glass-to-metal seal and the sidewall of the can is utilized for substantially preventing electrolyte materials including gases contained within a capacitor can having an open end closed by a glass-to-metal seal from reaching the surface or surfaces of the glass-to-metal seal and the surface or surfaces of the can which are to be connected together by soldering, welding or the like. However, the resilient means contains an opening

of sufficient size to allow the electrolyte to reach the film forming metal anode riser-terminal joint to cure any defects in the dielectric oxide formed thereon.

3,624,459
ELECTROLYTE COMPOSITION FOR WET ELECTROLYTIC CAPACITORS
John F. Brown, Jr., Schenectady, N.Y.; Donald R. Ochar, Columbia, S.C., and David A. Vermilyea, Schenectady, N.Y., assignors to General Electric Company
Filed Dec. 3, 1969, Ser. No. 881,852
Int. Cl. H01g 9/02
U.S. Cl. 317—230 **7 Claims**

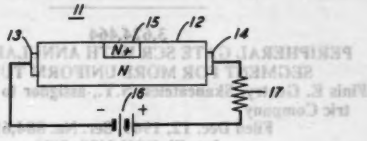
The use of surface active agents as inhibitory additives to the electrolyte in wet electrolytic capacitors employing aluminum electrodes is described. Each molecule of the inhibiting amphiphilic substances contains a strongly inhibiting hydrophilic group attached to a hydrophobic group.

3,624,460
ELECTROLYTIC CAPACITOR EMPLOYING GLASS-TO-METAL HERMETIC SEAL
Edward M. Correll, West Columbia, S.C., assignor to General Electric Company
Filed Dec. 29, 1969, Ser. No. 889,004
Int. Cl. H01g 9/10
U.S. Cl. 317—230 **8 Claims**



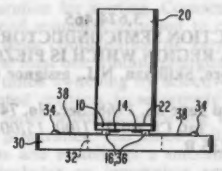
An electrolytic capacitor is provided having a metal-to-glass hermetic seal assembly wherein a glass body containing an effective amount of chromic oxide is directly bonded outwardly and inwardly to a film-forming metal such as tantalum. The glass has a mean thermal coefficient of expansion which is not greater than that of the metal of the seal and does not differ therefrom substantially over a wide temperature range, thus resulting in a substantially matched or slight compression type of seal. All components of the seal exposed to contact with the electrolyte are resistant to sulfuric acid. In one embodiment, utilizing an all-welded tantalum case, a substantial reverse voltage capability is made possible. A fluorocarbon spacer ring separating the porous anode from the casing wall and a thin ceramic heat shield for protection of the anode during welding assembly of the case also provide a cushioning effect for vibration and shock resistance.

3,624,461
TWO-VALLEY SEMICONDUCTOR OSCILLATOR
Toshiya Hayashi, North Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 11, 1966, Ser. No. 564,071
Int. Cl. H01l 9/00
U.S. Cl. 317—234 R **2 Claims**



Modifications are disclosed in two-valley semiconductor oscillators, made of materials such as N-type gallium arsenide, that alter the characteristic oscillatory frequency of each device by changing the electric field within the device. Such changes are effected by varying the resistivity of the semiconductor material, either locally or continuously throughout the device; by altering the cross section of the device, either continuously or in steps; or by changing the point at which the field is applied to the semiconductor material.

3,624,462
FACE-BONDED PHOTOARRAY PACKAGE
William S. Phy, Los Altos Hills, Calif., assignor to Fairchild Camera and Instrument Corporation, Syosset, N.Y.
Filed July 3, 1969, Ser. No. 838,882
Int. Cl. H01l 5/00
U.S. Cl. 317—234 R **4 Claims**

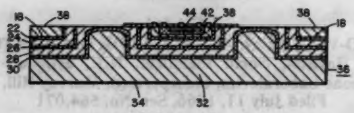


A fiber-optics shield overlying the principal light-sensitive surface of a photoarray device provides protection from mechanical damage while eliminating unwanted crosstalk between components. The package also provides a member extending from the photoarray to provide for the dissipation of heat.

3,624,463
METHOD OF AND APPARATUS FOR INDICATING SEMICONDUCTOR ISLAND THICKNESS AND FOR INCREASING ISOLATION AND DECREASING CAPACITY BETWEEN ISLANDS
Uryon Sahari Davidsohn, Scottsdale, Ariz., assignor to Motorola Inc., Franklin Park, Ill.
Filed Oct. 17, 1969, Ser. No. 867,193
Int. Cl. H01l 19/00
U.S. Cl. 317—234 **10 Claims**

The thickness of a single crystal island, which forms part of a slab of material, is indicated by the number of lines appear-

ing on the surface of the slab. Since the lines are edges of thin layers of an insulating material, the insulating layer or



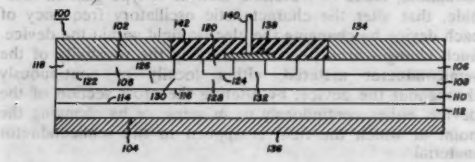
layers also act to isolate the single crystal islands from each other and also to reduce the capacity between the islands.

3,624,464

PERIPHERAL GATE SCR WITH ANNULAR BALLAST SEGMENT FOR MORE UNIFORM TURN ON

Finis E. Gentry, Skaneateles, N.Y., assignor to General Electric Company

Filed Dec. 12, 1969, Ser. No. 884,658
Int. Cl. H01 *3/00, 5/00*
U.S. Cl. 317—234 R **3 Claims**



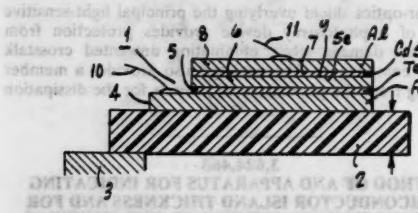
An SCR is formed with a diffused region interposed between the gate and adjacent edge of the emitter layer to increase the lateral resistance offered to the gate signal and thereby assure more uniform conduction of the gate signal. The gate metallization shorts the adjacent edge of the junction associated with the diffused region, and the shorted edge is substantially uniformly spaced from the adjacent edge of the emitter layer so that the lateral resistance to signal current is substantially uniformly distributed.

3,624,465

HETEROJUNCTION SEMICONDUCTOR TRANSDUCER HAVING A REGION WHICH IS PIEZOELECTRIC

Robert M. Moore, Skillman, N.J., assignor to RCA Corporation

Filed June 26, 1968, Ser. No. 740,161
Int. Cl. H01 *11/00, 15/00*
U.S. Cl. 317—235 R **14 Claims**



A stress sensitive semiconductor device having two adjacent semiconductor regions at least one of which is piezoelectric, with a PN-heterojunction between the regions. Upon application of stress to the heterojunction, the polarization of the piezoelectric semiconductor is altered to modulate current flow across the PN junction.

3,624,466

DEPLETION-TYPE IGFET HAVING HIGH-CONDUCTIVITY N-TYPE CHANNEL

George L. Schnable, Lansdale, Pa., assignor to General Instrument Corporation, Newark, N.J.

Filed Mar. 2, 1970, Ser. No. 15,676
Int. Cl. H01 *5/00, 11/00, 7/00*
U.S. Cl. 317—235 **10 Claims**

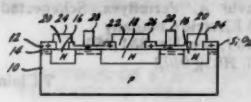


FIG. 10. WAFER AFTER MAKING OXIDE CUTS AND METALLIZING SOURCE, DRAIN, AND GATE

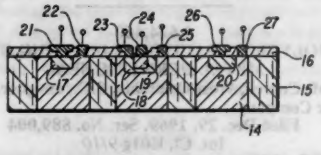
A depletion-type insulated gate field effect transistor (IGFET) comprising (1) a P-type semiconductive wafer containing N-type source and drain regions, and a relatively low resistivity N-type region at the surface of said wafer which provides a conductive channel between said source and drain regions, (2) an oxide insulating layer overlying said wafer, and (3) a conductive gate electrode overlying the part of said insulating layer which overlies said conductive channel. During its fabrication, the IGFET is heat treated by baking it at at least 500° C. for about several hours or longer; this provides in said oxide layer a sufficient density of positive charges to induce more than about 5×10^{11} electrons per square centimeter at the surface of the wafer between the source and drain regions, thereby to create said N-type region at the surface of said wafer.

3,624,467

MONOLITHIC INTEGRATED-CIRCUIT STRUCTURE AND METHOD OF FABRICATION

Kenneth E. Bean, Richardson, and Paul S. Gleim, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 17, 1969, Ser. No. 799,721
Int. Cl. H01 *7/36, 19/00*
U.S. Cl. 317—235 R **7 Claims**



Polycrystalline silicon having a needlelike oriented grain structure is found to have anisotropic electrical and thermal properties. A monolithic integrated-circuit structure having a plurality of monocrystalline silicon islands is fabricated in a polycrystalline silicon matrix having such a grain structure, with the grain direction oriented to provide maximum electrical resistivity between the monocrystalline islands, and maximum thermal conductivity toward a header or other heat sink. In one embodiment, the monocrystalline islands and polycrystalline matrix are grown by vapor deposition of silicon on a monocrystalline substrate provided with a suitable masking pattern, whereby the polycrystalline material grows on the mask concurrently with the growth of monocrystalline silicon on the unmasked areas of the substrate.

3,624,468

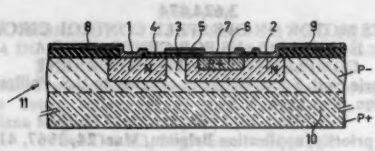
INSULATED GATE FIELD-EFFECT TRANSISTOR WITH OPPOSITE-TYPE GATE CONNECTED REGION INSET IN SOURCE OR DRAIN

Frederik Leonard Sangster, Emmasingel, Eindhoven, and Rijkent Jan Nienhuis, Nijmegen, both of Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Apr. 23, 1969, Ser. No. 818,725
Claims priority, application Netherlands, Apr. 23, 1968, 6805785; Mar. 25, 1969, 6904620
Int. Cl. H01 *19/00*
U.S. Cl. 317—235 R **5 Claims**

An insulated gate field-effect transistor is described in which an additional region of the opposite type conductivity

is inset in the source or drain regions and connected to the gate. The additional junction thereby formed is reverse biased during operation. When inset in the drain, the reverse-biased junction provides additional gate-drain capacitance for a Miller integrator circuit, whereas when inset in the

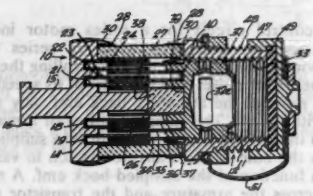


source, the additional junction can act as a safety diode between the gate and source. The low breakdown voltage of the additional junction due to the high-impurity content of the regions increases the protection afforded by the safety diode.

3,624,469
ANTIBACKLASH SCREW-THREAD ADJUSTABLE ROTOR FOR LOW-LOSS CAPACITOR

John E. Johanson, Boonton, N.J., assignor to Johanson Manufacturing Corporation, Boonton, N.J.

Filed Dec. 9, 1970, Ser. No. 96,308
Int. Cl. H01g *5/10*
U.S. Cl. 317—249 T **5 Claims**

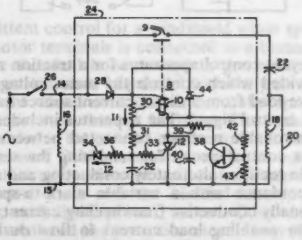


A low-loss capacitor having hollow cylindrical electrodes which are coaxially interleaved. The capacitance is varied by rotation of the rotor electrodes which are mounted on a screw member for axial displacement with respect to the stator electrodes when the screw member is turned. The screw member has a frictional-locking means in the form of a pair of diametrically opposed, outwardly bulging, thin-walled sections interspaced by through openings. A square opening is provided within the outer end of the screw member to permit adjustment thereof for tuning by use of a nonmetallic tuning rod tool of complemental square cross-sectional shape.

3,624,470
SINGLE-PHASE MOTOR-STARTING CONTROL APPARATUS

Richard A. Johnson, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 26, 1970, Ser. No. 5,849
Int. Cl. H02p *1/44*
U.S. Cl. 318—221 G **5 Claims**

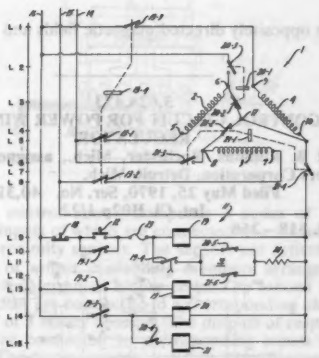


A starting circuit for a single-phase electric motor is provided that includes solid-state circuit means connected with the auxiliary winding for developing a signal proportional to motor speed and controlling an electromechanical relay that permits application of line power to the auxiliary winding only upon predetermined speed conditions.

3,624,471
APPARATUS FOR PROGRESSIVE PHASE SWITCHING FROM WYE TO DELTA CONNECTION OF THREE-PHASE MOTOR

Leslie G. Japp, Toronto, Ontario; John F. Phenix, Agincourt, Ontario, and Robert Sutherland, Scarborough, Ontario, all of Canada, assignors to A.O. Smith Corporation, Milwaukee, Wis.

Filed Apr. 22, 1970, Ser. No. 30,703
Int. Cl. H02p *5/28*
U.S. Cl. 318—225 R **8 Claims**



A three-phase motor has three phase windings connected in a wye configuration for starting. Contactors are progressively and in timed sequence actuated to connect the wye windings into a delta configuration by varying the winding connection with at least one winding energized at all times. A circuit provides timed switching by selectively opening and then closing related contacts to selectively disconnect and connect one or more windings according to a preselected sequence to the powerlines. The timed switching minimizes current transients and establishes a smooth transition. The control circuit includes an incomplete sequence current-sensing element to disconnect the control circuit and thereby the phase windings in response to a selected excessive or extended intermediate sequence operation.

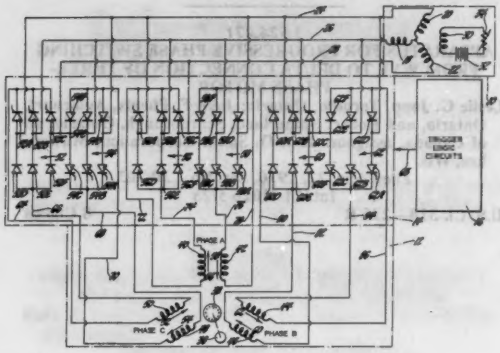
3,624,472
CYCLOCONVERTER MOTOR SYSTEM

Donald E. Graham, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 9, 1970, Ser. No. 79,465
Int. Cl. H02p *5/40*; H02m *1/08*, *7/44*
U.S. Cl. 318—227 **2 Claims**

A cycloconverter motor system which includes 18 controlled rectifiers and 18 diodes connected to provide six unidirectionally conductive bridge rectifier switching means for supplying a three-phase AC induction motor from a three-phase AC source. The induction motor is provided with two identical three-phase windings, each of which is comprised of three identical electrically isolated windings. Each of the six windings is connected with a respective one of the six unidirectionally conductive switching means. In this manner, each phase winding is comprised of two identical

windings which are energized by their respective unidirectionally conductive switching means sequentially to

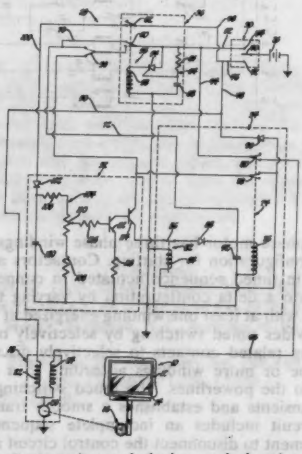


provide oppositely directed magnetic fields and motor operation.

3,624,473
CONTROL CIRCUIT FOR POWER WINDOW REGULATOR

Samuel B. Robbins, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 25, 1970, Ser. No. 40,315
Int. Cl. H02p 1/22
U.S. Cl. 318—266 6 Claims



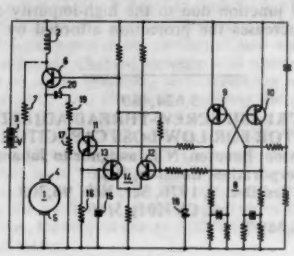
Apparatus for opening and closing a window in accordance with a manually operated switch. A reversible electric motor having first and second field windings and an armature drivably connected to the window opens the window upon placement of the switch in a window-opening setting, which causes energization of the first winding. When the switch is placed in a window-closing setting the second winding is energized and the motor closes the window. Should the motor stall when closing the window due to the window encountering an obstacle the resulting decrease in the armature voltage below a certain level causes a voltage-sensing network and a current-directing network to deenergize the second winding and energize the first winding, thereby opening the window until the switch is removed from the window-closing setting or the window is fully opened.

A time delay network is provided to prevent the voltage-sensing network from monitoring the armature voltage for a predetermined time after the switch is placed in the window-closing position so as to preclude voltage transients caused by starting the motor from effecting reversal of the motor during the predetermined time. A limit switch is positioned so as to be responsive to the window position and prevents the current-directing network from reversing the window travel when the window is substantially closed so as to allow the motor to stall when sealing the window closed.

3,624,474
SERIES MOTOR ON-OFF SPEED CONTROL CIRCUIT HAVING MEANS FOR GENERATING A COMPLEMENTARY FIELD CURRENT

Jean Marie Nolf, Forst, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 22, 1968, Ser. No. 715,383
Claims priority, application Belgium, Mar. 24, 1967, 41,578
Int. Cl. H02p 5/16
U.S. Cl. 318—331 13 Claims

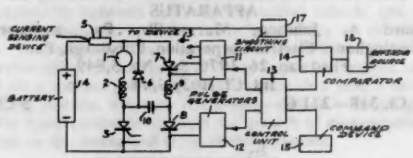


A speed control circuit for a series motor includes a periodically operable transistor switch in series with the motor field winding and armature for controlling the width of the motor energizing pulses as a function of its speed. A sampling circuit samples the armature back emf only when the transistor switch is off. The sampled pulses of armature emf are fed to an integrating circuit which in turn supplies a control signal to the base of the transistor switch to vary its on-off time as a function of the sampled back emf. A resistor is connected across the armature and the transistor switch in order to energize the series field with a fixed current during each sampling period.

3,624,475
DUTY CYCLE CONTROL APPARATUS

Brian Turton Smith, London, England, assignor to Westinghouse Brake and Signal Company, Limited, London, England

Filed Mar. 24, 1969, Ser. No. 809,877
Claims priority, application Great Britain, Apr. 11, 1968, 17,436/68
Int. Cl. H02p 5/16
U.S. Cl. 318—341 5 Claims



A duty cycle control apparatus for a traction motor or the like is provided which controls the mean voltage applied to an inductive load from a direct current source in response to an applied control signal. The apparatus includes a semiconductor controllable rectifier connected between the source and load, a control circuit for rendering the semiconductor controllable rectifier alternately conducting and nonconducting in accordance with a variable mark-to-space ratio, a unidirectionally conductive freewheeling current path around the load for enabling load current to flow during the time between "on" periods of the rectifier, and a current sensing device for producing a current-limiting signal indicative of mean current flowing from the source through the rectifier.

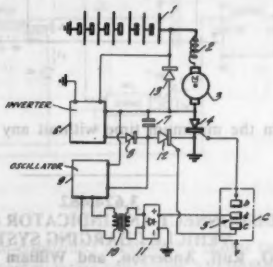
The control circuit acts, responsive to the current-limiting signal, to impose a restriction upon the available maximum mark-to-space ratio so as to tend to maintain the mean current in the controllable rectifier within predetermined limits without correspondingly limiting the current in the load.

3,624,476

ELECTRONIC DEVICE FOR REGULATING THE FEED OF A DC MOTOR, ESPECIALLY INTENDED FOR THE ELECTRIC TRACTION OF VEHICLES

Raffaello Bruscaglioni, Milan; Teodoro Vadala, Monza, and Vito Tateo, Milan, all of Italy, assignors to Fabbrica Italiana Magneti Marelli S.p.A., Milan, Italy

Filed Oct. 23, 1969, Ser. No. 868,805
Claims priority, application Italy, Mar. 25, 1969, 14505 A/69
Int. Cl. H02p *5/16*
U.S. Cl. 318—345 5 Claims



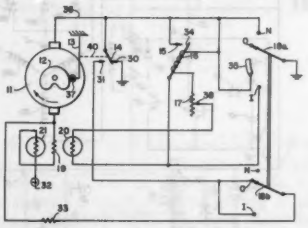
Regulation of the speed, current and torque of a DC motor is effected by a novel inverter-oscillator combination controlling the charge on a capacitor, the discharge of which serves to block a control diode through which the direct current voltage for the motor is supplied.

3,624,477

INTERMITTENT CONTROL WITH A NORMALLY OPEN THERMAL SWITCH FOR WINDSHIELD WIPER SYSTEM

Willis E. Rieman, Skaneateles; John J. Beck, Seneca Falls, and Edward R. Betz, Auburn, all of N.Y., assignors to Gulf & Western Systems Company, New York, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,236
Int. Cl. B60s *1/08*
U.S. Cl. 318—443 12 Claims



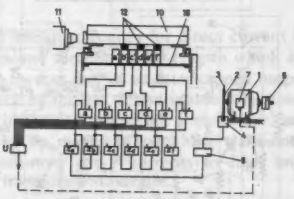
An intermittent control for a windshield wiper system. One of the two motor terminals is connected to a battery and the second motor terminal is connected to ground through the conventional park switch. In parallel with the park switch is a bimetal element whose contacts are normally open and are closed as a resistance element heats up. The resistance element is connected in series with a potentiometer between the battery and ground. During each wipe cycle, no current flows through the resistance element and potentiometer, the resistance element cools and the bimetal element contacts open. During each dwell period, current flows through the resistance element and the potentiometer to heat the bimetal element. The dwell period is determined by the setting of the potentiometer. It is also possible to automatically vary the dwell period by including a thermistor in series with the resistance element, the thermistor being heated by an additional resistance element connected in the motor circuit. The drier the windshield, the greater the motor current and the higher the temperature of the additional resistance element. The impedance of the thermistor increases with the temperature of the additional resistance element to increase the dwell period.

3,624,478

BINARY CONTROL CIRCUIT FOR MOLD-FILLING DEVICE

Johann Schwab, Vienna, and Helmut Blaha, both of Vienna, Austria, assignors to SEMPERIT Osteneichisch-Amerikanische Gummiwerke Aktiengesellschaft, Vienna, Austria

Continuation of application Ser. No. 697,466, Jan. 12, 1968, now abandoned. This application Sept. 3, 1970, Ser. No. 69,492
Int. Cl. H02p *3/04*
U.S. Cl. 318—470 3 Claims



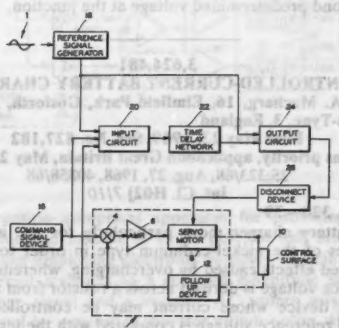
The binary control circuit comprises a series of "OR" gates the first inputs of which are connected to a corresponding series of proximity sensors. The sensors are activated by the approach of sensor controlling members arranged according to a predetermined binary code. The second inputs of the "OR" gates are connected to a corresponding chain of bistable stages of a binary counter. The outputs of respective "OR" gates are connected to corresponding inputs of an "AND" gate. The binary counter is fed by a continuous train of pulses from a pulse generator. As soon as the binary number on the bistable counter stages equals to a complementary number of the predetermined code, all inputs of the "AND" gate are under a signal and the "AND" gate releases an output control signal that stops the mold filling operation.

3,624,479

FAIL INACTIVE, NONREDUNDANT TIME DELAY MONITOR

John G. Callas, Wood-Ridge, N.J., assignor to The Bendix Corporation

Filed May 4, 1970, Ser. No. 34,037
Int. Cl. G05b *23/02*
U.S. Cl. 318—565 11 Claims



A nonredundant time delay monitor for a control system of the type responsive to system command and followup signals.

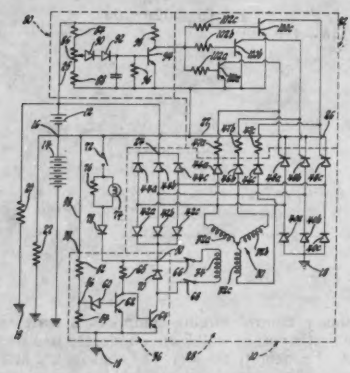
The monitor provides an alternating signal which switches to a constant level signal for disconnecting the control system from its load for internal monitor failures and for system failures when the difference between the command and followup signals exceeds a predetermined threshold for a specified interval.

3,624,480

DUAL BATTERY CHARGER HAVING DUAL OUTPUT

Robert W. Campbell, and Donald L. Cummins, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 12, 1970, Ser. No. 88,590
Int. Cl. H02j 7/10, 7/24
U.S. Cl. 320—15 **4 Claims**



First and second batteries are connected in series between a point of constant reference potential and the output terminal of a first full-wave bridge rectifier. The output terminal of a second full-wave bridge rectifier comprising silicon-controlled rectifiers (SCR) is connected to a junction between the batteries. The respective legs of the first and second rectifiers are each connected to the same output winding of the stator of an alternator. A first voltage detector responsive to the voltage across the first and second terminals causes the SCR's to be nonconductive when the voltage across the first and second terminals is less than a first predetermined voltage. A second voltage detector controls the current through the field winding of the alternator in response to the voltage at the junction between the batteries to maintain a second predetermined voltage thereat. The drop in current and therefore voltage at the junction occurring an instant after the SCR's are rendered nonconductive causes the second voltage detector to increase the current and voltage at the first output to increase by an amount sufficient to reestablish the second predetermined voltage at the junction.

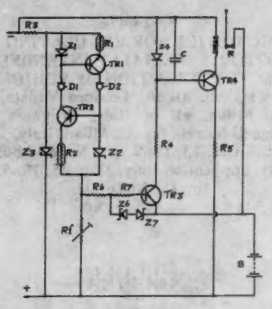
3,624,481

CONTROLLED-CURRENT BATTERY CHARGERS

James A. Macharg, 16, Elmfield Park, Gosforth, Newcastle-Upon-Tyne, 3, England

Filed May 23, 1969, Ser. No. 827,182
Claims priority, application Great Britain, May 27, 1968, 25,323/68, Aug. 27, 1968, 40858/68
Int. Cl. H02j 7/10
U.S. Cl. 320—39 **26 Claims**

A battery charger more particularly for use in charging batteries of the nickel-cadmium type in order to avoid the undesired effects caused by overcharging, wherein a variable reference voltage is derived across a resistor from a constant-current device whose current may be controlled and this derived reference voltage is compared with the terminal voltage existing across the battery being charged, the result of this comparison causing the charging current to be switched off until the battery voltage drops below the reference voltage, whereby the state of charge of the battery is sensed through the ON/OFF ratio of the charging current and appropriate adjustments may be made to the reference voltage in order to achieve a substantially complete charging of the



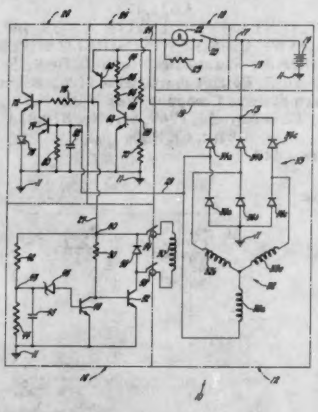
battery in the minimum time without any overcharging occuring.

3,624,482

FIELD DISCONNECT AND INDICATOR CIRCUIT FOR A VEHICLE CHARGING SYSTEM

Donald O. Ruff, Anderson, and William J. Sensing, West Lafayette, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 21, 1970, Ser. No. 73,946
Int. Cl. H02j 7/24
U.S. Cl. 320—48 **3 Claims**



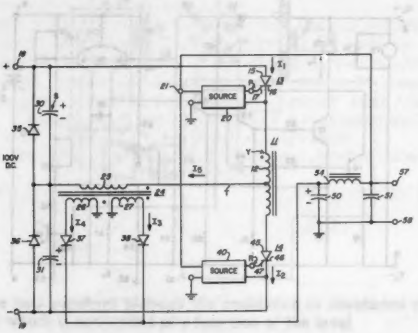
First and second NPN transistors connected by a single conductor to one side of an indicator lamp the other side of which is connected to the output of a vehicle charging system by an ignition switch. Upon closure of the switch, the first transistor is rendered conductive to turn on a PNP transistor which then connects the vehicle battery to the field winding in the alternator of the charging system. When the output of the charging system is below a predetermined value, the second NPN transistor is biased to conduct current through the indicator lamp and also through a diode connected forwardly between the second NPN and ground. The voltage drops through the diode and the second NPN provide sufficient bias to the first NPN to maintain conduction therethrough and in turn through the PNP

3,624,483

SWITCHING REGULATOR USING LOW-VOLTAGE DIODES

Luther L. Genuit, Scottsdale, Ariz., assignor to Honeywell Information Systems, Inc.

Filed Aug. 24, 1970, Ser. No. 66,277
Int. Cl. H02m 3/22
U.S. Cl. 321—2 5 Claims



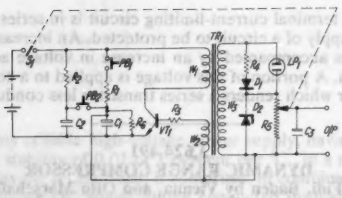
A pair of silicon-controlled rectifiers, a center tapped inductor, a pair of commutating capacitors, a transformer, and a pair of low-voltage diodes convert a relatively large value of unregulated DC voltage to a relatively small value of regulated DC voltage. A pair of conventional diodes connected across the commutating capacitors limit the reverse voltage across these capacitors and limit the operating currents and voltages in the other elements of the switching regulator.

3,624,484

OSCILLATOR OUTPUT CIRCUIT CONFIGURATION

John E. Colyer, Longueville, New South Wales, Australia, assignor to The Wellcome Foundation Limited, Incorporated, London, England

Filed Dec. 3, 1969, Ser. No. 881,901
Claims priority, application Australia, Dec. 13, 1968, 47786/68
Int. Cl. H02m 3/32; A61n
U.S. Cl. 321—2 11 Claims



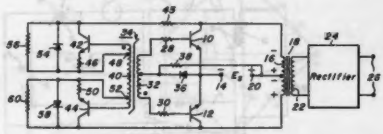
A circuit configuration and an electronic locator/stimulator device for medical purposes incorporating said circuit configuration in which a first pulse component of an output signal, which is clipped to a predetermined voltage amplitude, is impressed across load terminals of the circuit while a second pulse component of the output signal appears across a gas discharge indicator lamp.

3,624,485

SURGE CURRENT LIMITING CIRCUITRY FOR DIRECT CURRENT TO DIRECT CURRENT CHOPPER INVERTERS

John F. Ringelman, Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 4, 1970, Ser. No. 43,444
Int. Cl. H02m 3/32; H03k 3/281
U.S. Cl. 321—2 5 Claims



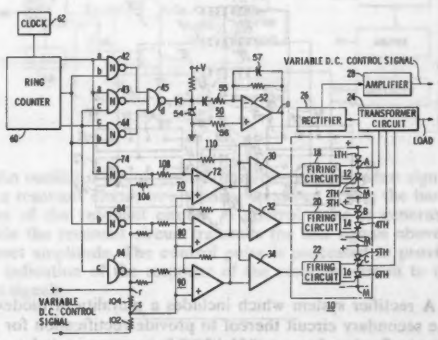
Surge current limiting circuitry for direct current to direct current inverters and the like of the type in which switching of transistors to reverse flux in a center-tapped output transformer is achieved by the use of a saturable core transformer. Surge currents in the saturable core transformer, as it saturates, are limited by means of switching transistors which switch the transformer drive currents to high impedance paths when the transformer saturates.

3,624,486

APPARATUS FOR CONTROLLING PULSE WIDTH MODULATION OF INVERTER CIRCUITS

Robert M. Oates, Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1970, Ser. No. 17,131
Int. Cl. H02m 7/52
U.S. Cl. 321—5 8 Claims



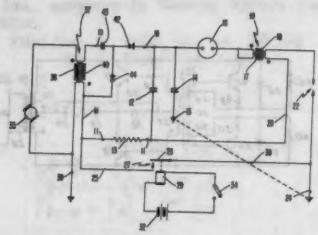
The invention comprises apparatus for providing pulse width modulation suitable to single pole, or half bridge, inverter circuits employing electronic switches wherein a comparator circuit responds to a constant magnitude sawtooth input voltage signal and a variable AC square wave input voltage signal by generating inverter switch pulses when the magnitude of the sawtooth voltage and the magnitude of the AC square wave voltage are equal. The magnitude of the square wave voltage determines the degree of inverter pulse width modulation employed and the firing angle of the inverter switches.

3,624,487

DUAL ENERGY ELECTRICAL PULSE GENERATING SYSTEM

Louis H. Segall, Sidney, N.Y., assignor to The Bendix Corporation

Filed Aug. 28, 1969, Ser. No. 853,637
Int. Cl. H02m 7/00
U.S. Cl. 321—15 8 Claims



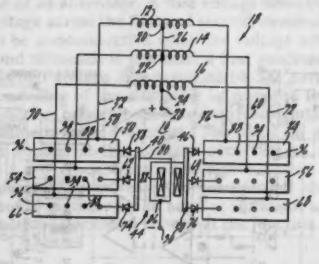
A dual energy circuit for selectively generating high or low energy electrical pulses for supplying a spark gap or other load. The circuit employs a source of power comprising a power transformer and voltage doubling means to charge condensers of different capacities, and switching from one energy system to the other is effected in the high energy condenser charging path at low current.

3,624,488

INTERPHASE TRANSFORMER CONFIGURATION

Eugene W. Rabut, Shelby Township, Macomb County, Mich., assignor to The Udylite Corporation, Warren, Mich.

Filed Nov. 10, 1970, Ser. No. 88,343
Int. Cl. H02m 7/00
U.S. Cl. 321—26 18 Claims



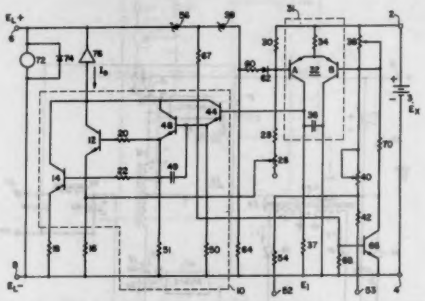
A rectifier system which includes a plurality of diodes in the secondary circuit thereof to provide rectification for the energy flowing from a main transformer connected to the source of alternating current power, the configuration including a plurality of parallel diodes in each phase to increase the current-carrying capabilities and an interphase transformer interconnected with each set of phase diodes, the interphase transformers being physically stacked in the rectifier assembly to facilitate the increasing of the number of paralleled diodes and thus the number of paralleled interphase transformers. The interphase transformers are stacked within two channels, the channels being bolted together to squeeze the cores of the interphase transformers. A common conductor is electrically connected, as by welding, to a center portion of the interphase transformer turns, the common conductor providing a common output conductor for all of the center taps of the interphase winding.

3,624,489

CONSTANT CURRENT VARIABLE LOAD REGULATOR

Arnold L. Betton, Reseda, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Feb. 2, 1970, Ser. No. 7,829
Int. Cl. G05f 1/58
U.S. Cl. 323—4 10 Claims



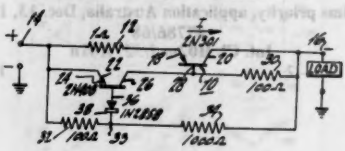
A variable electronic load simulator for testing power supplies having a variable resistance for maintaining a predetermined level of load current. The load current is monitored by means of a voltage drop across the resistor in series with the variable resistance circuit. This voltage drop is compared to a fixed reference voltage in a differential control amplifier which controls the variable resistance circuit to maintain the load current at the predetermined level.

3,624,490

TWO TERMINAL CURRENT REGULATOR

Michael Scott Fisher, Ringoes, N.J., assignor to RCA Corporation

Filed Feb. 5, 1964, Ser. No. 342,649
Int. Cl. G05f 1/58
U.S. Cl. 323—9 22 Claims



A two terminal current-limiting circuit is in series with the power supply of a circuit to be protected. An increase in load current is accompanied by an increase in voltage across the terminals. A portion of this voltage is applied to a controlling transistor which renders a series transistor less conductive.

3,624,491

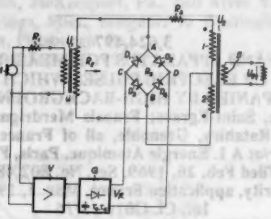
DYNAMIC RANGE COMPRESSOR

Werner Fidi, Baden by Vienna, and Otto Marschall, Vienna, both of Austria, assignors to Akustische u. Kino-Gerate Gesellschaft m.b.H., Vienna, Austria

Filed Nov. 3, 1969, Ser. No. 873,388
Claims priority, application Austria, Nov. 4, 1968, A10699/68
Int. Cl. H04b 1/64; G05f 5/00
U.S. Cl. 323—19 11 Claims

A dynamic range compressor includes a resistance controllable as a function of the level of an input signal, or a resistance network, including semiconductor elements, controllable as a function of the input level, and further includes a differential transformer having two opposing windings of substantially equal numbers of turns, and having a third winding

coupled to the two windings. The signal to be compressed is fed directly to one of the two windings and is fed to the other



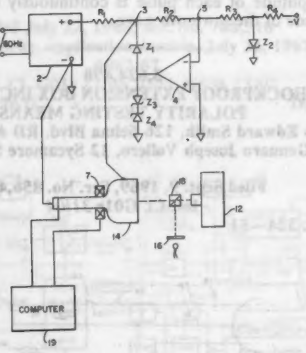
of the two windings through the resistance or resistance network which is controlled as a function of the level.

3,624,492

HIGH-VOLTAGE POWER SUPPLY WITH TEMPERATURE DEPENDENT ZENER IN A MICROFILM PRINTER DEVICE

Asger T. Nielsen, San Diego, Calif., assignor to Compufoto, Inc., Wellesley Hills, Mass.

Filed May 18, 1970, Ser. No. 38,165
Int. Cl. G05f 1/46
U.S. Cl. 323—20 9 Claims



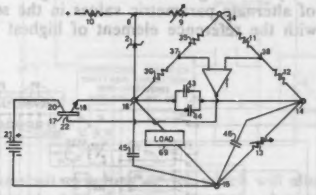
A highly reliable high-voltage power supply, having a temperature stability of 0.01 of 1 percent per °C., in a microfilm printer device, is described; it comprises, in combination with a high-voltage DC power source connected through a series resistor to an output line, a regulator device connected between the output line and the output of an operational amplifier, a feedback resistor connected between the output and the summing junction of the amplifier, and a constant-voltage reference of voltage lower than that at the summing junction connected through a resistor to the summing junction, the output of the regulator device being subject to variation with change in temperature and the amplifier, constant-voltage reference, and their resistors being adapted to vary the voltage of the amplifier output oppositely to the variation of the output of the regulator device, thereby to maintain the output line at a constant voltage.

3,624,493

REGULATED POWER SUPPLY EMPLOYING INTEGRATED CIRCUITS

Joseph R. Gately, Woodside, N.Y., assignor to Forbro Design Corp., New York, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,509
Int. Cl. G05f 1/56
U.S. Cl. 323—40 7 Claims



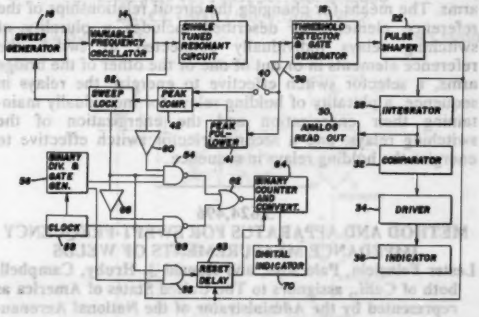
A bridge-controlled regulated power supply employs an integrated circuit control amplifier and reference with external circuit additions which improve the current-limiting characteristics, provide protection for the amplifier, uses single control of bridge current and offset zeroing, and automatically cancels noise from the reference voltage zener diode.

3,624,494

APPARATUS FOR MONITORING THE RESPONSE OF A RESONANT CIRCUIT

Orhan Turan, 102 Eashin Drive, Fayetteville, N.Y.

Filed Dec. 30, 1968, Ser. No. 787,821
Int. Cl. G01n 27/00
U.S. Cl. 324—57 R 17 Claims



An oscillator circuit applies variable-frequency test signals to a resonant circuit in a manner to sweep across the bandpass of the resonant circuit. A control pulse is generated while the resonant circuit transmits the test signals above a preset amplitude. The control pulse is processed to provide an indication of the response of the resonant circuit to the test signals.

3,624,495

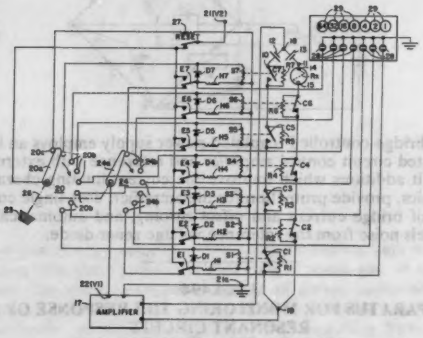
ELECTRICAL BRIDGE CIRCUIT FOR MEASURING A PARAMETER OF AN ELECTRICAL ELEMENT

Richard Freund, 273 Lawton Ave., Cliffside Park, N.J.

Filed Dec. 24, 1969, Ser. No. 887,911
Int. Cl. G01n 27/02
U.S. Cl. 324—62 R 6 Claims

An electrical bridge circuit for measuring a given parameter of an electrical element such as a resistor, inductor, or capacitor comprises a pair of power-supply input terminals and a first pair of bridge arms connected across the input terminals to establish a point of fixed intermediate potential. The bridge circuit further includes a second pair of bridge arms connected in series across the terminals, the first arm initially effectively including only terminals for connection to the electrical element to be measured. A control circuit is

connected between the point of intermediate potential and the junction of the first and second arms. The bridge circuit includes a series of reference electrical elements having parameters of the type to be measured, for example resistance, of values progressing in approximately a geometric series, and the second bridge arm initially includes a plurality of such reference elements having a total parametric value greater than the largest value to be measured. The circuit further includes means responsive to an electrical output of the control circuit of only a given polarity for sequentially and selectively including in the second bridge arm reference elements of alternate parametric values in the series, commencing with the reference element of highest parametric



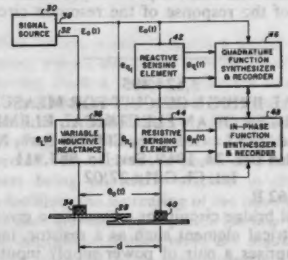
value, and for selectively including one or more of the other reference elements in the first bridge arm, thereby progressively to reduce the arithmetic difference between the total parametric values of the electrical elements in the two bridge arms. The means for changing the circuit relationships of the reference elements as described includes a plurality of switching relays individually connected to switch the reference elements in or out of one or the other of the bridge arms, a selector switch effective to energize the relays in sequence, a plurality of holding relays for individually maintaining their energization and the energization of the switching relays, and a second selector switch effective to energize the holding relays in sequence.

3,624,496

METHOD AND APPARATUS FOR SWEPT-FREQUENCY IMPEDANCE MEASUREMENTS OF WELDS

Lester Feinstein, Palo Alto, and Ronald J. Hruby, Campbell, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1969, Ser. No. 889,583
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 R **10 Claims**



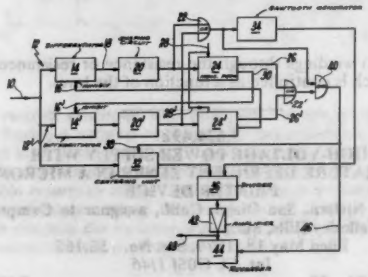
A method and apparatus for testing integrated circuit microtab welds which includes preparing a set of reference signatures for a set of welds of known characteristics and then comparing a signature obtained from a tested weld to these reference signatures to evaluate the integrity of the tested weld. The reference and test signatures are obtained by passing high-frequency electric signals through the various welded structures and sweeping the frequency thereof through the resonance frequencies of the welds. In-phase variations and quadrature variations produced in the electric signals passed through the welds are measured and compared against the reference signatures in order to qualitatively evaluate the integrity of the tested weld.

3,624,497

METHOD AND APPARATUS FOR MEASURING THE SLOPES OF ELECTRIC PULSES WHICH MAY BE ACCOMPANIED BY HIGH-BACKGROUND NOISE

Jacques Max, Saint-Egreve; Francis Merdrignac, Grenoble, and Jules Ratahiry, Grenoble, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Feb. 26, 1969, Ser. No. 802,484
Claims priority, application France, Mar. 1, 1968, 142 151
Int. Cl. G01n *23/16*
U.S. Cl. 324—77 R **11 Claims**



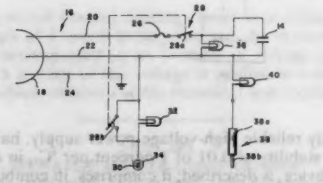
In order to measure the slopes of pulses which make up a signal which may be accompanied by high-background noise, a sawtooth wave of slope is generated. The sawtooth wave is generated in synchronism with each pulse of the signal and the amplitude of each pulse is continuously divided by the amplitude of the sawtooth wave.

3,624,498

SHOCKPROOF EXTENSION BOX INCLUDING POLARITY TESTING MEANS

Charles Edward Smith, 126 Selma Blvd. RD #2, Dover, N.J., and Gennaro Joseph Vollero, 12 Sycamore St., Bloomfield, N.J.

Filed Sept. 9, 1969, Ser. No. 856,421
Int. Cl. G01r *31/04*
U.S. Cl. 324—51 **6 Claims**



A shockproof extension box providing plural outlets includes an insulated terminal screw connected to the neutral lead of the input cable through a first light and a probe connected to the neutral lead through a second light. A switch disconnects the positive input lead for the first testing step wherein the input cable is plugged into a wall outlet and the finger of the operator is used to contact the terminal screw. If under these circumstances the first light lights up the inlet plug should be reversed. In a second testing step, the switch is closed so that the extension box outlets are energized and a piece of equipment is plugged into one of the box outlets.

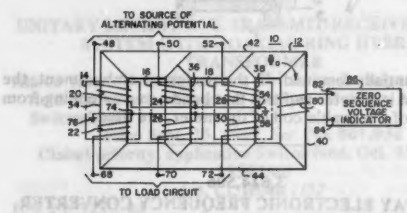
The probe is then brought into contact with the equipment and if the second light lights up the equipment plug is reversed. If the second light lights up for both plug positions the equipment should not be used.

3,624,499

ELECTRICAL TRANSFORMER WITH ZERO SEQUENCE VOLTAGE INDICATOR

David R. Smith, McKeesport, Pa., and Alvin Y. Broverman, Crystal Springs, Miss., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 29, 1970, Ser. No. 76,541
Int. Cl. G01r *25/00*
U.S. Cl. 324—86 8 Claims



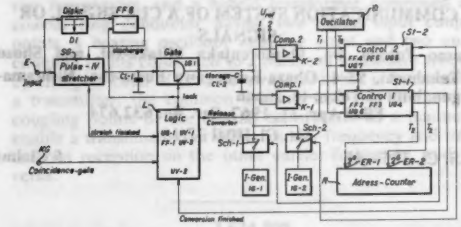
A three-phase electrical transformer of the core-form type including wye-wye connected primary and secondary windings having grounded neutrals. The magnetic core has three winding legs for the primary and secondary windings, and at least one additional leg. An auxiliary winding is disposed on the additional leg and connected to indicating means which provides a signal when the voltage induced into the auxiliary winding by zero sequence flux flowing through the additional leg reaches a predetermined magnitude.

3,624,500

METHOD AND AN ARRANGEMENT FOR DETERMINING PULSE AMPLITUDES

Rupert Patzelt, Vienna, Austria, assignor to Osterreichische Studiengesellschaft Fur Atomenergie Ges m.b.H., Vienna, Austria

Filed July 22, 1968, Ser. No. 746,518
Claims priority, application Austria, July 26, 1967, A 6962/67
Int. Cl. G01r *17/06, 1/00;* H03k *13/02*
U.S. Cl. 324—99 D 16 Claims



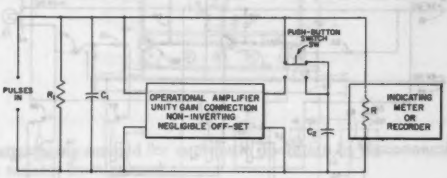
An analog-digital converter includes a storage capacitor, an oscillator, and a counter, such as a binary counter, a decade counter, or the like. Each input pulse charges the storage capacitor. The storage capacitor is initially rapidly discharged until it approaches the zero charge point, and thereafter is discharged slowly. During the rapid or quick discharge, oscillator pulses delivered to the counter have a higher value than during the slow discharge. Thereby, after complete discharge of the capacitor, the number stored in the counter corresponds to the amplitude of the input signal. The required stability and linearity of the conversion is ensured by continuous calibration of the converter by a pulse generator.

3,624,501

TIME CONSTANT SWITCHING SYSTEM FOR A METER APPARATUS

Walter Francis Joseph, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 12, 1970, Ser. No. 63,139
Int. Cl. G01r *1/00, 1/22*
U.S. Cl. 324—111 6 Claims


PUSH-BUTTON SWITCH
PULSES IN
OPERATIONAL AMPLIFIER UNITY GAIN CONNECTION NON-INVERTING NEGLIGIBLE OFF-SET
INDICATING METER OR RECORDER

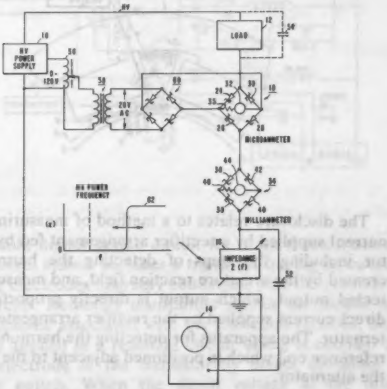
A time constant switching device which will allow the integrating time constant of a rate meter to be changed without affecting the average output voltage, even when zero suppression and scale expansion are employed to obtain high sensitivity meter readings. This is accomplished by switching an additional capacitor into an integrating circuit said additional capacitor being precharged by an operational amplifier, to the voltage of the capacitor in the integrating circuit. The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

3,624,502

CORONA-ARCING DETECTING TEST SYSTEM USING ZENER DIODES

Earle R. Bunker, Alhambra, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed July 18, 1969, Ser. No. 842,880
Int. Cl. G01r *1/36, 15/08, 19/22*
U.S. Cl. 324—131 4 Claims



A corona detection and measurement apparatus is provided which detects AC, DC corona discharge or combinations of both, which balances out stray capacitance current, and which employs a sensitive corona current-measuring circuit with protection from possible damages due to arcing which may occur.

3,624,503

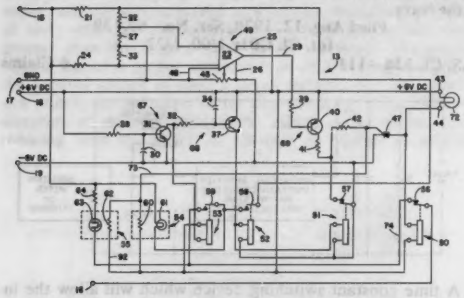
MEANS AND METHOD FOR DETECTING STRAY ELECTRICAL ENERGY, ABOVE A PREDETERMINED LEVEL, ON A CONDUCTOR

George W. Barrowcliff, Euless, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Apr. 4, 1969, Ser. No. 813,452
Int. Cl. G01r *19/16*
U.S. Cl. 324—133 17 Claims

A method and apparatus for detecting stray electrical energies imposed on a conductor whereby the levels of the ener-

gies to be detected range from a given, low level to a given, higher level and the detection is accomplished by detecting



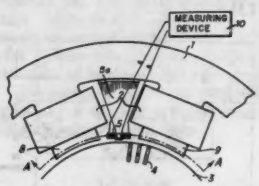
any energies present at successively reduced levels from the given, higher level to the lowest energy level desired to be detected.

3,624,504

METHOD OF AND APPARATUS FOR MEASURING THE DIRECT CURRENT SUPPLIED BY A RECTIFIER ARRANGEMENT FED BY AN ALTERNATOR

Jacques Joly, Champagne-sur-Seine, France, assignor to Societe de Constructions Electromecaniques Jeumont-Schneider, Paris, France

Filed Dec. 23, 1968, Ser. No. 785,871
Claims priority, application France, Dec. 29, 1967, 134405
Int. Cl. G01r *29/00*
U.S. Cl. 324—158 MG **9 Claims**



The disclosure relates to a method of measuring the direct current supplied by a rectifier arrangement fed by an alternator including the steps of detecting the harmonic fluxes created by the armature reaction field, and measuring the detected output, which output is directly proportional to the direct current supplied by the rectifier arrangement of the alternator. The apparatus for detecting the harmonic fluxes is a reference coil which is positioned adjacent to the armature of the alternator.

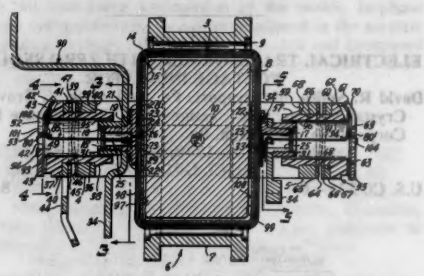
3,624,505

HIGH-IMPACT WITHSTANDING TAUT BAND SUSPENSION INSTRUMENT

Willem J. L. Boreas, Sayreville, N.J., assignor to Weston Instruments Division, Newark, N.J.

Filed June 26, 1969, Ser. No. 836,828
Int. Cl. G01r *1/00*
U.S. Cl. 324—154 R **14 Claims**

A taut band suspension instrument capable of withstanding severe impact without permanent damage to the taut band suspension. The suspension system is characterized by a taut band which extends between the movable element and frame of the instrument, and has its respective ends mounted to slide along smooth surfaces spaced from the points of connection of the band with both the movable element and the frame. The smooth surfaces along which the band can slide allow the axis of the band to shift when the instrument is subjected to severe impact, and as a result, stresses in the band



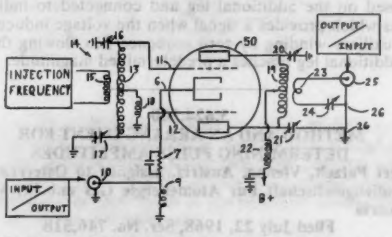
are substantially lessened. In the preferred embodiment, the instrument is a meter and two taut bands, one extending from each end of a movable coil of the meter, are used.

3,624,506

TWO-WAY ELECTRONIC FREQUENCY CONVERTER

John S. Townsend, 124 S. Douglas St., Wilson, N.C.

Filed Mar. 23, 1970, Ser. No. 21,720
Int. Cl. H03d *7/14*
U.S. Cl. 325—18 **2 Claims**



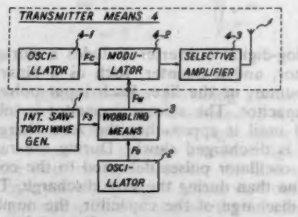
A two-way electronic frequency converter is operable in forward or reverse modes without switching.

3,624,507

COMMUNICATION SYSTEM OF A CUE SIGNAL OR SIGNALS

Masao Fukata, 94, Shimorenjaka Mitaka-shi, and Shozo Takahashi, 95-4, Ohaza-Kumagawa Fussa-cho, Nishtamagun, both of Tokyo-to, Japan

Filed Apr. 21, 1967, Ser. No. 632,674
Int. Cl. H04l *27/10*
U.S. Cl. 325—45 **5 Claims**



Disclosed herein is a system for transmitting a cue signal or signals by use of at least one wobbled wave obtained by slightly wobbling a low-frequency sinusoidal wave, in an in-

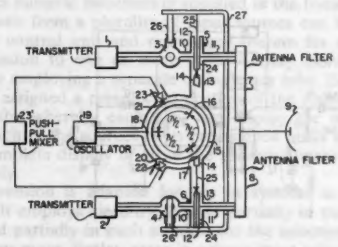
termittent periodic manner, along a substantially sawtooth wave pattern the number of cycles of which is determined in accordance with the cue signal to be transmitted: in which the transmitted wobbled wave is applied to a narrow passband filter and changed into a pulse train the number of pulses of which is equal to the number of cycles of the sawtooth wave pattern, wherein the pulses have a constant period irrespective of slight deviation of the wobbling frequency range and/or slight deviation of the center frequency of the narrow passband filter; and, in which the transmitted cue signal is detected by counting the number of pulses of the pulse train in consideration of the constant period of pulses.

3,624,508

UNITARY MICROWAVE TRANSMIT-RECEIVE DUPLEX SYSTEM WITH COAXIAL RING HYBRID TRANSFORMER

Alfred Kach, Untersiggenthal, Switzerland, assignor to Patelhold Patentverwertungs- & Elektro- Holding AG, Glarus, Switzerland

Filed Sept. 25, 1969, Ser. No. 861,032
Claims priority, application Switzerland, Oct. 15, 1968, 15393/68
Int. Cl. H04b *1/52*
U.S. Cl. 325—24 **9 Claims**



Unitary microwave transmit-receive apparatus for duplex operation comprises a pair of transmitters having different carrier frequencies, a common antenna, a pair of T-junction microwave switches, a common beating oscillator having a frequency substantially midway between the transmitting carrier frequencies, and a hybrid transformer composed of a coaxial ring conductor having two signal input coupling points, a beating oscillator coupling point and two output coupling points connected to a balanced modulator frequency changer. Each of the microwave switches is connected to a transmitter, the common antenna and one of the input coupling points of the coaxial transformer in a manner to enable a transmission on either carrier frequency and simultaneous reception on the other carrier frequency, and vice versa.

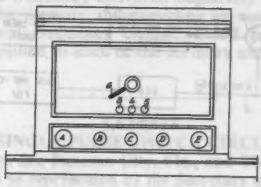
3,624,509

ELECTRICALLY CONNECTED REMOTE CONTROL FOR AUTOMATICALLY TUNED RECEIVER

Emanuele Morici, 9, Via Monte delle Gioie, and Carmelo Zimatore, 10, Via del Nuoto, both of Rome, Italy

Filed Aug. 7, 1969, Ser. No. 848,184
Claims priority, application Italy, Aug. 13, 1968, 39073 A/68
Int. Cl. H04b *1/06*
U.S. Cl. 325—316 **4 Claims**

A remote control for receivers tuned by means of variable capacity diodes, wherein the turning of a first-knob connects the receiver to the power supply and actuates a volume potentiometer, the turning of a second knob lowers the upper cutoff frequency of the LF response curve by inserting a capacitor across the LF input, a three-position switch controls the waveband ranges, while a further knob switches the set from manual to automatic tuning by switching the base of a transistor to the output of the electronic-tuning circuit, the



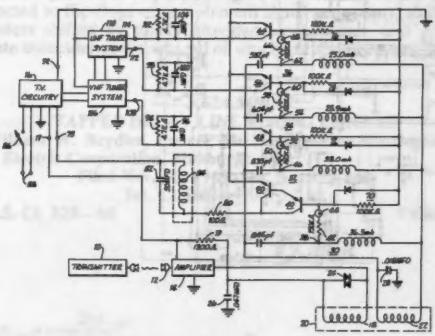
latter being readied for automatic operation by disconnecting a resistor from ground.

3,624,510

THRESHOLD DIGITAL SWITCH CIRCUIT FOR REMOTE CONTROL SYSTEM

Lyle Bruce Juroff, Indianapolis, Ind., assignor to RCA Corporation

Filed Apr. 22, 1969, Ser. No. 818,222
Int. Cl. H04b *1/06*
U.S. Cl. 325—392 **15 Claims**



A threshold digital switch circuit for a television receiver remote control system includes a transistor having its collector-emitter electrodes operably connected with the receiver's control circuit. Remotely transmitted signals are picked up by a microphone associated with the television receiver, amplified and applied to a resonant circuit which is coupled to the base electrode of the transistor by means including a neon tube switch. When the signal voltage at the tube reaches a threshold level, actuating the neon tube, signal current flows through the neon tube and into the transistor's base electrode causing the transistor's emitter-collector current path to be conductive. A capacitor connected in the collector electrode circuit of the transistor reduces collector electrode voltage change due to short duration noise voltages which may render the transistor momentarily conductive.

3,624,511

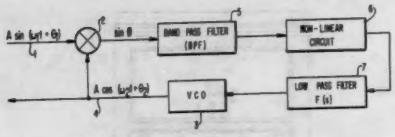
NONLINEAR PHASE-LOCK LOOP

James Chin-Chun Sui, Washington, D.C., assignor to Communications Satellite Corporation

Filed Aug. 7, 1969, Ser. No. 848,244
Int. Cl. H04b *1/16*; H03b *3/04*
U.S. Cl. 325—420 **3 Claims**

A conventional phase-lock loop modified by inserting a

nonlinear element to provide a faster loop response for small



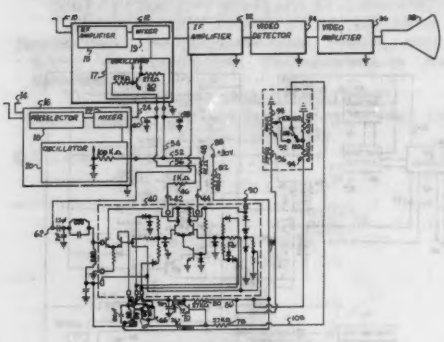
phase differences thereby providing an accelerated lockup time.

3,624,512

AUTOMATIC FREQUENCY CONTROL SYSTEM

Wayne Wheeler Evans, Indianapolis, Ind., assignor to RCA Corporation

Filed June 2, 1969, Ser. No. 829,403
Int. Cl. H04b *1/16*
U.S. Cl. 325—422 **5 Claims**



A television receiver includes automatic fine-tuning circuits which are coupled to a voltage responsive variable capacitance device in the heterodyne local oscillator resonant circuit to control the oscillator frequency. The automatic fine-tuning circuits include a tunable resonant discriminator circuit and provide an output voltage having a magnitude determined by the frequency deviation of the output signal from the television mixer stage from the resonant frequency of the discriminator circuit. The discriminator circuit is tuned over a band of frequencies by varying the voltage across a voltage-responsive variable capacitance device in the discriminator circuit.

3,624,513

IMAGE FREQUENCY SUPPRESSION CIRCUIT

John P. Costas, Fayetteville, N.Y., assignor to General Electric Company

Filed Jan. 29, 1970, Ser. No. 6,769
Int. Cl. H04b *1/26*
U.S. Cl. 325—437 **8 Claims**

In a heterodyne circuit, an input signal is applied to an adder circuit which produces an intermediate frequency signal. Suppression of the image frequency is provided by a feedback loop connected between the output and an input of the adder circuit. In the feedback loop, the image frequency is cancelled by negative feedback and replaced by the complex conjugate of the desired frequencies. The complex conjugate is added coherently to the input signal at the adder.

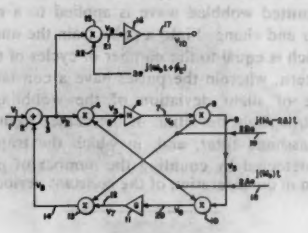


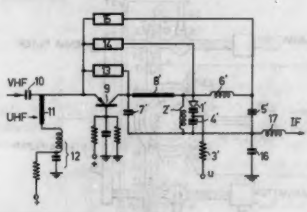
Image suppression is determined by the gain of the feedback loop.

3,624,514

TUNING CIRCUIT HAVING COMMON TUNING ELEMENT FOR THREE FREQUENCY RANGES AND SELF-OSCILLATING MIXER USING SAME

Walter Putzer, Krefeld, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 9, 1970, Ser. No. 1,717
Int. Cl. H04b *1/28;* **H03j** *3/18*
U.S. Cl. 325—440 **7 Claims**



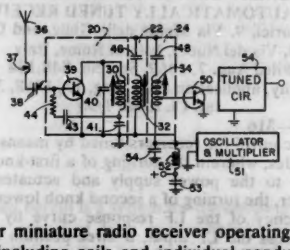
A tuning circuit for the reception of signals from three spaced frequency ranges, comprising parallel resonant circuits having at least one common tuning element for all the frequency ranges. The tuning of the resonant circuits is varied by the common tuning element to produce resonance in only one of the frequency ranges at a time. Signals within the frequency ranges of the other circuits not being used are rejected.

3,624,515

ULTRAHIGH FREQUENCY TUNER WITH HELICAL RESONATORS COUPLED THROUGH APERTURES IN SHIELDS

John R. Rezek, Addison, and Joseph F. Cramer, Jr., Downers Grove, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed July 15, 1968, Ser. No. 744,836
Int. Cl. H04b *1/16, 1/08*
U.S. Cl. 325—462 **6 Claims**



Tuner for miniature radio receiver operating at ultrahigh frequency including coils and individual conductive shields

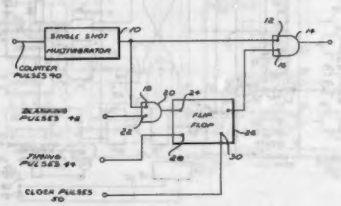
forming helical resonators. The coils are tuned at the low-impedance end by aluminum slugs providing low loss, and may be capacitively loaded at the high-impedance end. Apertures in the shields provide coupling between the adjacent resonators, with the aperture in one shield being of the size to control the coupling and the aperture in the adjacent shield being larger so that it does not affect the coupling.

3,624,516

SELECTIVE BLANKING OF VIDEO DISPLAY

Frederic D. Rando, Cherry Hill, and William P. Rogers, Collingswood, both of N.J., assignors to Ultronic Systems Corporation

Filed Sept. 3, 1968, Ser. No. 756,916
Int. Cl. H03b 19/00
U.S. Cl. 328—14 6 Claims



Alpha numeric information supplied in the form of electrical signals from a plurality of input sources can be fed to a central control unit and rearranged therein for subsequent transmission to one or more video display monitors, each monitor employing a separate cathode-ray tube. Each source can be assigned a preselected portion of the display area on each tube whereby each tube can display the information from each of the sources in its preassigned areas in the form of a complete display of all of the sources apparently simultaneously.

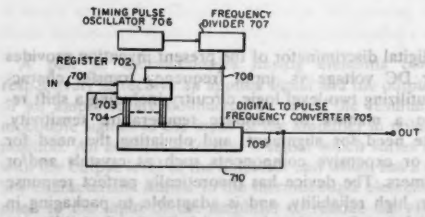
Our invention is adapted for use in systems as described above. It employs circuitry located partially in the common unit and partially in each monitor for the selective blanking of one or more display areas in one or more tubes. In other woeds, information from some of the sources may be displayed by any one monitor while at the same time information from others of the sources can be blanked out on the same monitor. To this end, control pulses identified with corresponding input sources are sequentially introduced at the unit for transmission to all of the monitors. Circuitry at each monitor can be selectively enabled to detect such control pulses and to utilize the detected pulses for selective blanking.

3,624,517

CIRCUIT ARRANGEMENT FOR MAKING SPACES IN A PULSE TRAIN MORE NEARLY UNIFORM

Kengo Kobayashi, Kawasaki-shi, and Mitsuo Manabe, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 19, 1969, Ser. No. 851,316
Claims priority, application Japan, Aug. 21, 1968, 43/59747
Int. Cl. H03k 3/72
U.S. Cl. 328—61 16 Claims



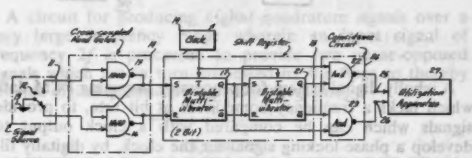
A digital to pulse frequency converter converts command pulses accumulated in a memory to a pulse train having a frequency directly proportional to the accumulated value in the memory. The frequency converter has a plurality of inputs connected to corresponding outputs of the memory and an output connected in negative feedback arrangement to an input of the frequency converter thereby feeding back the output of the frequency converter negatively and in a digital manner to the memory and providing an output pulse train free of abrupt frequency change. Fixed frequency pulse trains are supplied to each of the memory and the frequency converter.

3,624,518

SINGLE PULSE SWITCH CIRCUIT

Clell A. Dildy, Jr., Panama City, Fla., and The United States of America as represented by the Secretary of the Navy

Filed Mar. 24, 1970, Ser. No. 22,267
Int. Cl. H03k 1/00, 3/12
U.S. Cl. 328—63 10 Claims



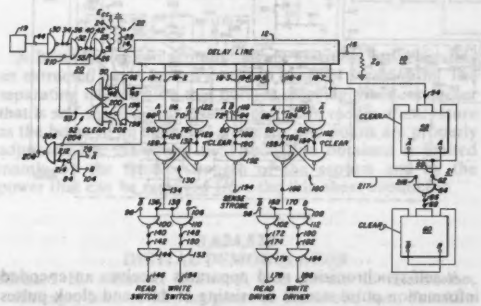
A logical switching circuit is disclosed which produces a single, noise-free output pulse of one clock pulse duration in response to a noisy input data signal and a predetermined clock signal. It incorporates signal sources, effectively connected to flip-flops or complement signal generators, shift registers shifted by timely provided clock pulses, and AND-gate coincidence circuits, all of which are serially connected.

3,624,519

TAPPED DELAY LINE TIMING CIRCUIT

William W. Beydler, Laurel, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 10, 1969, Ser. No. 875,349
Int. Cl. H03k 1/00, 5/159
U.S. Cl. 328—66 7 Claims



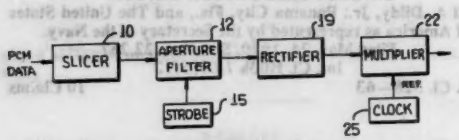
A tapped delay line timing circuit for producing timing pulses for a ferrite core memory. The electrical length of the delay line employed is one-quarter that of the total memory cycle time required for a single timing cycle of the memory core for which the timing circuit produces timing pulses. An initiate pulse is utilized to initiate delay line operation and delay line pulses traversing the delay line are recirculated through the delay line. A two-stage, four-state counter is employed to determine the number of times the pulse has been recirculated through the delay line. At the same time, the counter states are used to control the opening and closing of gate devices which select the timing pulses off the delay line.

3,624,520

WIDE BAND DIGITAL PHASE DETECTOR

Frank A. Perkins, Jr., 6595 Sheridan Road, Melbourne Village, Fla., and James A. Proctor, 420 2nd Ave., Melbourne Beach, Fla.

Continuation-in-part of application Ser. No. 638,809, May 16, 1967. This application Jan. 5, 1970, Ser. No. 684
Int. Cl. H03k *1/00*
U.S. Cl. 328—72 10 Claims



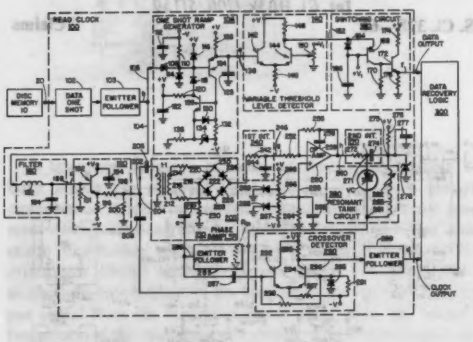
A wholly digital system for processing incoming PCM data which lacks a frequency component at bit rate, to provide signals which can be compared with a clock output to develop a phase-locking signal for the clock, by digitally filtering a sliced version of the PCM data, digitally rectifying the digital output of the filter and digitally comparing the rectified output with clock output in a digital multiplier to derive phase information.

3,624,521

SYNCHRONOUS READ CLOCK APPARATUS

Alfred J. Dellicicchi, West Newton, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 19, 1970, Ser. No. 47,696
Int. Cl. H03k *13/00*
U.S. Cl. 328—119 22 Claims



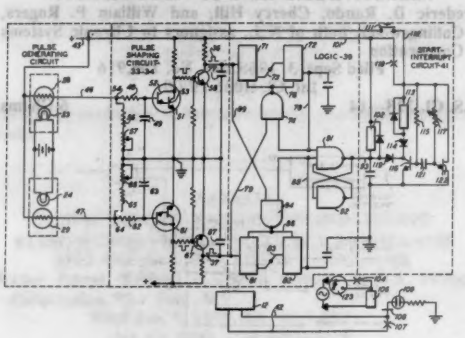
A self-synchronizing read apparatus receives an encoded information pulse stream consisting of data and clock pulses from a random access device and applies this train across a normally inactive resonant tank circuit. The tank circuit generates a first reference signal and a detection circuit derives a reference clock waveform from predetermined reference points of the reference signal. The read apparatus further includes a generator circuit which generates a second linear reference signal from each of the pulses of the pulse stream and derives pulses of a data output waveform by applying the linear signals to a variable threshold switching circuit. The apparatus further includes circuits for generating an error voltage whose magnitude is proportional to the discrepancy in phase between the data train and reference signal and applies a correction voltage to the tank circuit which adjusts its frequency at a critically damped rate to decrease the discrepancy in phase.

3,624,522

LOGIC CIRCUITRY FOR MONITORING THE CYCLIC OPERATIONS OF A PAIR OF DEVICES

John J. Glosek, Roselle, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Jan. 9, 1970, Ser. No. 1,611
Int. Cl. H03k *5/18*
U.S. Cl. 328—120 9 Claims



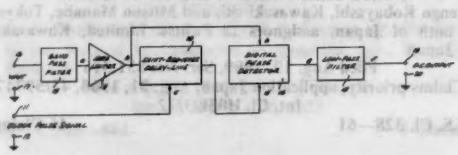
Logic circuitry is utilized to monitor the continued cyclic operation of a pair of devices, e.g., strand-feeding devices. As the devices function a pair of trains of pulses are generated and the logic circuit detects and generates a malfunction signal upon the generation of two pulses within one train without the intervening generation of a pulse in the other train. The logic circuit accepts concurrent generation of pulses, and the subsequent reversal of the lead pulse in the trains without the generation of malfunction signals. Facilities are also provided to allow the devices to commence operation independent of control by the logic circuits.

3,624,523

DIGITAL FREQUENCY DISCRIMINATOR

Joel Katz, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 19, 1969, Ser. No. 862,634
Int. Cl. H03b *3/04*
U.S. Cl. 328—141 4 Claims



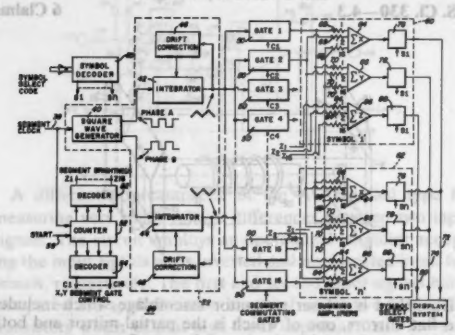
The digital discriminator of the present invention provides a linear DC voltage vs. input frequency transfer characteristic utilizing two-level logic circuitry including a shift register in a manner to minimize temperature sensitivity, eliminate need for alignment, and obviating the need for critical or expensive components such as crystals and/or transformers. The device has theoretically perfect response linearity, high reliability, and is adaptable to packaging in microminiature form, thereby requiring less volume than its analog counterparts.

3,624,524

ANALOG CHARACTER GENERATOR

Joseph E. Bryden, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sept. 4, 1968, Ser. No. 757,422
Int. Cl. G06k 3/00
U.S. Cl. 328—143 11 Claims



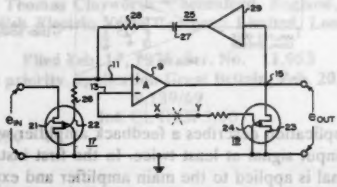
An analog character generator which continuously generates X- and Y-position signals to write symbols and a brightness unblanking signal. The selected symbol waveforms are approximated by joining a number of points by straight line segments. Each straight line segment is generated by using displaced triangular voltage waveforms sequentially applied to input resistors of a summing amplifier. The straight line segment joining two points of a waveform is produced by summing the correct proportions of a positive and negative going ramp. Segment commutation is achieved by gating the triangular pulse train with switching actually taking place when the waveform is at zero, which minimizes ringing and other spurious effects.

3,624,525

TRUE RMS CONVERTER

William G. Smith, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 20, 1969, Ser. No. 878,345
Int. Cl. G06g 7/20
U.S. Cl. 328—144 4 Claims



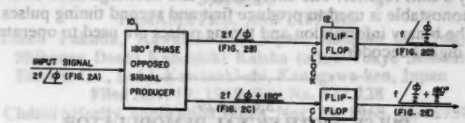
A pair of thermocouples having elements connected respectively to receive an applied signal and the output signal of an amplifier are connected to apply the resultant thermocouple signals to the input of the amplifier in polarity opposition. An additional feedback signal which varies directly with the output level of the amplifier and which has a square-law characteristic similar to the thermocouple elements is applied to the input of the amplifier to reduce the effects of signal level on the response time of the circuit and allow ultralow signal frequencies to be accurately measured.

3,624,526

WIDE BAND DIGITAL QUADRATURE CIRCUIT

Irving Silverman, Camp Springs, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 4, 1970, Ser. No. 34,281
Int. Cl. H03b 1/04
U.S. Cl. 328—166 2 Claims



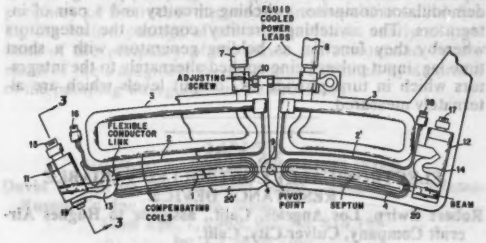
A circuit for producing digital quadrature signals over a very large frequency range wherein an input signal of frequency $2f$ is processed to provide two phase-opposed signals which are in turn processed by flip-flops to thereby provide digital quadrature signals of frequency f.

3,624,527

MAGNETICALLY SELF-SHAPING SEPTUM FOR BEAM DEFLECTION

Ed D. Hudson, Knoxville, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 15, 1970, Ser. No. 72,387
Int. Cl. H05h 13/00
U.S. Cl. 328—234 9 Claims



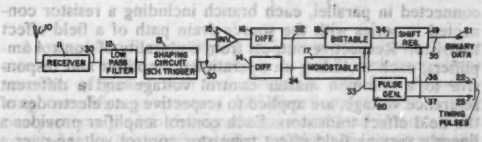
A beam deflection septum magnet assembly for separating an extracted beam from a confined beam of a cyclotron. The separating member is a thin current-carrying sheet conductor that is self-shaping and assumes the same radius of curvature as the beam to be deflected when the end points are properly adjusted. The maximum field reduction obtained is limited mainly by the tensile strength of the septum and by the power that can be removed from the thin sheet conductor.

3,624,528

DIGITAL DEMODULATOR

Richard H. Adlhock, Bellwood, and Gerald L. Giacomino, Chicago, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

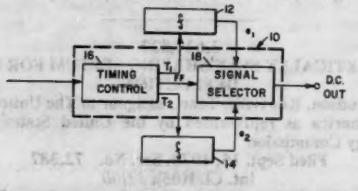
Filed June 23, 1970, Ser. No. 49,000
Int. Cl. H04l 27/14
U.S. Cl. 329—104 15 Claims



A digital demodulator for demodulating a received bit signal containing binary and timing information wherein the

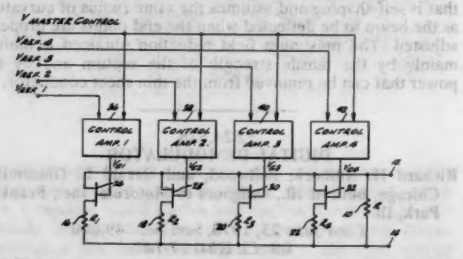
signal shifts between two levels. Transition detectors respond to shifts between the two levels to produce pulses. A pulse at the beginning of each bit period represents timing information and is followed by pulses representing binary information. The timing pulse energizes a monostable which in turn enables a bistable to count pulses occurring while the monostable is energized. The monostable remains energized for 75 percent of the bit period, and when the monostable is deenergized, the state of the bistable is sampled and stored by a shift register. The energization and deenergization of the monostable is used to produce first and second timing pulses. The binary information and timing pulses are used to operate a digital decoder.

3,624,529
PULSE WIDTH SIGNAL DEMODULATOR
Edward F. Gebelein, Jr., Harwinton, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed Nov. 25, 1969, Ser. No. 879,849
Int. Cl. H03k *9/08*
U.S. Cl. 329—104 **7 Claims**



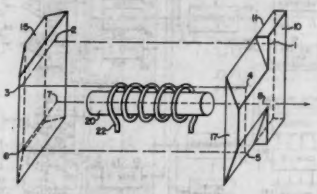
A demodulator circuit for providing a DC output signal which is unaffected by variations in pulse amplitude or repetition rate of a pulse width modulated input signal. The demodulator comprises switching circuitry and a pair of integrators. The switching circuitry controls the integrators whereby they function as holding generators with a short time lag; input pulses being applied alternately to the integrators which in turn provide DC output levels which are alternately measured.

3,624,530
ELECTRONICALLY CONTROLLED VARIABLE RESISTANCE DEVICE
Robert Zwirn, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed July 25, 1969, Ser. No. 844,890
Int. Cl. H03f *5/00, 21/00*
U.S. Cl. 330—3 **8 Claims**



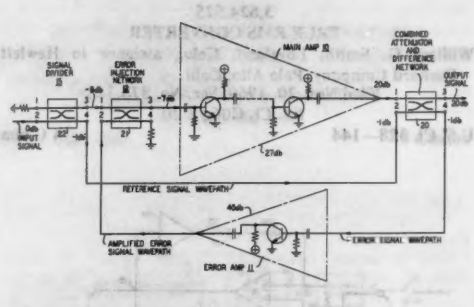
A resistor and a plurality of electrical circuit branches are connected in parallel, each branch including a resistor connected in series with the source-drain path of a field effect transistor. Respective outputs from a plurality of control amplifiers, each including an operational amplifier and responsive to a common master control voltage and a different reference voltage, are applied to respective gate electrodes of the field effect transistors. Each control amplifier provides a linearly varying field effect transistor control voltage over a preselected range of the master control voltage and first and second essentially constant field effect transistor control voltages when the master control voltage is respectively below and above the preselected voltage range.

3,624,531
LASER RESONATOR ASSEMBLAGE
Victor J. Norris, Jr., Towson, and James B. Hovis, Ellicott City, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 5, 1969, Ser. No. 855,601
Int. Cl. H01s *3/02, 3/05*
U.S. Cl. 330—4.3 **6 Claims**



Described is a laser resonator assemblage which includes two flat mirrors, one of which is the partial mirror and both of which are formed in the same plane surface on a common substrate joined to a first Porro prism disposed at one side with its hypotenuse face extending the length of the mirrors and disposed in the same plane. A second Porro prism, having its hypotenuse face equal in height and width to the first Porro prism and mirror unit, is arranged at right angles to such first Porro prism to form a rectangular three dimensional optical path between the mirrors.

3,624,532
REENTRANT SIGNAL FEEDBACK AMPLIFIER
Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Mar. 23, 1970, Ser. No. 21,855
Int. Cl. H03f *1/02*
U.S. Cl. 330—9 **3 Claims**

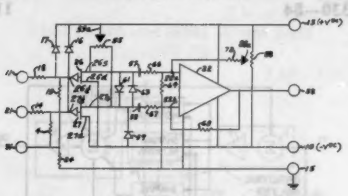


This application describes a feedback amplifier which utilizes the input signal at least twice. In the first instance, the input signal is applied to the main amplifier and experiences the full gain of the amplifier. Secondly, the input signal is used as a reference against which the amplified output signal is compared. Any difference between the reference signal and the output signal due to noise and/or distortion is identified as an error signal which is amplified in a separate error amplifier, and then injected into the input terminal of the main amplifier in phase to degenerate the error. Because the feedback only degenerates the error signal, and not the useful signal, a reentrant signal feedback amplifier is capable of operating over a greater stabilized bandwidth than conventional feedback amplifiers. In addition, an overall improvement in the signal-to-noise ratio can be realized.

3,624,533
DIFFERENTIAL PREAMPLIFIER

Peter Schiff, R. D. #2, Lambertville, N.J.

Filed July 8, 1969, Ser. No. 839,888
Int. Cl. H03f 3/16, 3/68
U.S. Cl. 330—30 7 Claims

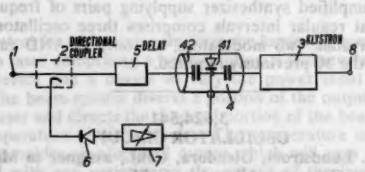


A differential preamplifier of the AC coupled type for measuring very small voltage differences between two input signals. The circuit employs an operational amplifier accepting the input signals at its inverted and noninverted input terminals, respectively. The first and second input signals being compared are applied to the inputs of respective field effect transistors which exhibit high-input impedance and low-output impedance. The field effect transistors are operated as current amplifiers yielding substantially unity voltage gain. Their outputs are connected through capacitive elements to the inverted and noninverted inputs, respectively, of the operational amplifier. The capacitors compensate for any constant or DC offset which may occur in the signal sources. Oppositely polarized semiconductor elements are connected in parallel across the input leads of the capacitors to severely limit overload voltage conditions. The low output impedances of the FET's connected thereto are such that the relatively low impedance of the diodes which are operated in a forward biased mode just below their threshold voltage, has no effect upon the low-impedance signals appearing at the source electrodes of the FET's so as to yield excellent common mode rejection characteristics. Diode clamps are provided to prevent overdrive and burn out of the FET's. Adjustable resistors are provided for balancing the FET outputs and for nulling the offset voltage of the operational amplifier at 0 volts when the signals applied to the circuit input terminals are of equal value.

3,624,534
A UHF KLYSTRON AMPLIFIER HAVING A SUBSTANTIALLY LINEAR INPUT/OUTPUT CHARACTERISTIC

Geoffrey Thomas Clayworth, Chelsmford, England, assignor to English Electric Valve Company Limited, London, England

Filed Feb. 17, 1970, Ser. No. 11,953
Claims priority, application Great Britain, Feb. 20, 1969, 9,189/69
Int. Cl. H03f 3/56
U.S. Cl. 330—47 2 Claims



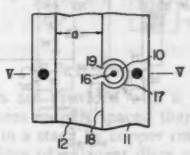
Known Klystrons are not linear amplifying devices, and so it is not possible to use a Klystron for the common amplification of UHF carriers modulated with a number of different modulating signals.

In the invention a multimodulated UHF Klystron amplifier comprises an amplifying Klystron and a correcting circuit having a nonlinear operating gain/signal level characteristic so chosen in relation to the nonlinear output/input characteristic of the Klystron that the overall output/input characteristic of the combination of Klystron and correcting circuit is substantially linear over a desired wide range of input.

3,624,535
PARAMETRIC AMPLIFIERS

Takeo Fukuda, Kawasaki-shi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha (a/k/a Tokyo Shibaura Electric Co., Ltd.), Kawasaki-shi, Kanagawa-ken, Japan

Filed Nov. 17, 1969, Ser. No. 877,228
Claims priority, application Japan, Nov. 29, 1968, 43/86950
Int. Cl. H03f 7/04
U.S. Cl. 330—4.9 5 Claims

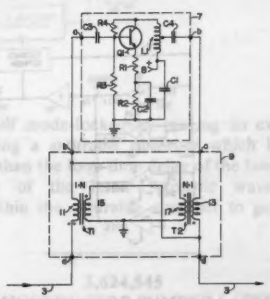


In a parametric amplifier wherein a diode is disposed in a pumping waveguide at the junction between a pumping waveguide and a coaxial line including central conductor connected to the diode, a recess for receiving the diode is formed in the pumping waveguide with a portion of the periphery of the recess disposed to intersect one wall defining the hollow passage of the waveguide. As nearly all portions of the periphery of the diode are surrounded by the metal of the waveguide, the reactance exhibited by a portion of the pumping waveguide can be decreased.

3,624,536
HIGH-DYNAMIC-RANGE AMPLIFIER

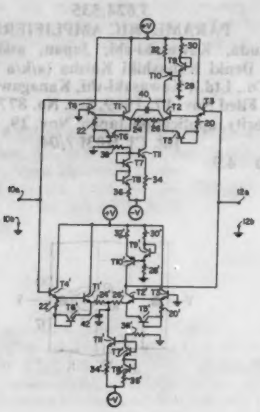
David E. Norton, Framingham, Mass., assignor to Adams-Russell Co. Inc., Waltham, Mass.

Filed Apr. 7, 1969, Ser. No. 814,105
Int. Cl. H03f 3/60
U.S. Cl. 330—53 7 Claims



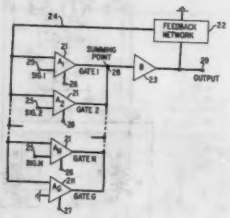
An amplifier for amplifying radiofrequency signals having a low-noise figure and the ability to handle relatively large amounts of power with low distortion. The high-dynamic-range amplifier comprises a dual directional coupler, having two ports coupled to the signal source and load and two ports coupled to an inverting amplifier, in which the input and output impedances of the amplifier are equal and are equal to the characteristic impedance of the source and load.

3,624,537
GYRATOR NETWORK
John Matarese, New City, N.Y., assignor to GTE Laboratories Incorporated
Filed July 7, 1969, Ser. No. 839,327
Int. Cl. H04f 9/00
U.S. Cl. 330—63 **6 Claims**



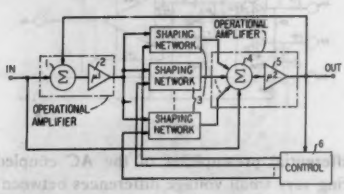
A gyrator network having a pair of oppositely phased voltage-to-current converters connected between two ports. Unlike prior art networks, each voltage-to-current converter is a single-stage circuit, namely, a difference amplifier in which the output resistor is replaced by a constant current source. This has the effect of producing a current change in a load connected to the output of the difference amplifier, which current change is proportional to a change in the input voltage. The resulting gyrator network has reduced power dissipation requirements.

3,624,538
TIME MULTIPLEXER WITH FEEDBACK
Edward A. Gere, Piscataway, and Hans P. Lie, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed May 21, 1969, Ser. No. 826,496
Int. Cl. H03f 1/36, 3/68
U.S. Cl. 330—84 **4 Claims**



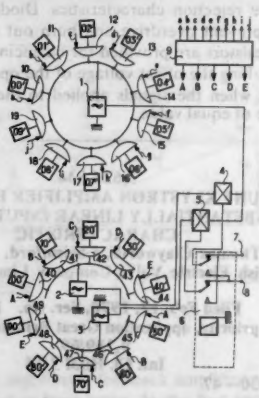
Time-multiplexing networks for analog signals are subject to spurious transmissions such as leakage signals and switching transients. This disclosure proposes to solve these problems by the provision of a feedback path from the common portion of the network to each of the input branches, each feedback loop containing at least one active device. In addition to the above advantages, such a network realizes all of the usual advantages accruing from the application of feedback to an amplifier.

3,624,539
EQUALIZER HAVING A PLURALITY OF MAIN PATH SHAPING NETWORKS AND FEEDFORWARD AND FEEDBACK PATHS
Chih-Yu Kao, Lawrence, and Carl F. Kurth, Andover, both of Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Dec. 17, 1969, Ser. No. 885,751
Int. Cl. H03f 3/68
U.S. Cl. 330—84 **11 Claims**



A multibump equalizer wherein a plurality of shaping networks are serially connected between a first summing network-amplifier combination and individual inputs to a second summing network-amplifier combination. A frequency independent feedforward path connects the input to the equalizer, which is also connected to an individual input of the first summing network, to an individual input on the second summing network. A frequency independent feedback path connects the output of the equalizer, which is also connected to the output of the first amplifier, to an individual input of the first summing network.

3,624,540
FREQUENCY SYNTHESIZER
Didier Leonard, Boulogne, France, assignor to C. I. T. Compagnie Industrielle Des Telecommunications, Paris, France
Filed Dec. 22, 1969, Ser. No. 887,232
Claims priority, application France, Dec. 20, 1968, 179756
Int. Cl. H03b 21/02
U.S. Cl. 331—38 **6 Claims**

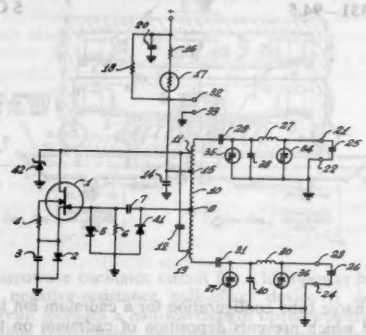


The simplified synthesizer supplying pairs of frequencies spaced at regular intervals comprises three oscillators, 24-quartz crystals, two modulators, but only 20-AND gates instead of the 30 previously required.

3,624,541
OSCILLATOR CIRCUIT
John W. Lundstrom, Glendora, Calif., assignor to Moisture Register Company, Alhambra, Calif.
Filed Nov. 3, 1969, Ser. No. 873,274
Int. Cl. G01r 27/26
U.S. Cl. 331—65 **9 Claims**

A field-effect transistor connected in a class C Hartley oscillator circuit has a diode connected to the gate to provide

bias. A similar diode is connected in series with the source to provide temperature stabilization of the operating point. Further temperature stabilization is obtained by means of a thermistor-compensated load network. The biasing diode protects against positive high-voltage transients developed in the vicinity of moisture-sensing electrodes coupled to the



tank circuit. A second diode is reverse-biased and coupled to the gate with opposite polarity to protect against negative transients. A zener diode connected to the drain prevents it from developing transients of negative voltage. To further protect against high-voltage transients, the moisture-sensing electrodes are coupled to the tank circuit through low-pass filters loaded by neon glowtubes.

3,624,542

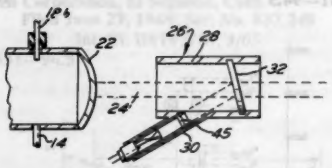
CONTROL FOR POWER OUTPUT OF GAS LASER

Alexander L. Pugh, Jr., Paoli, Pa., assignor to TRW Inc., Philadelphia, Pa.

Filed July 26, 1968, Ser. No. 748,011

Int. Cl. H01s *3/11, 3/22*; G02b *27/14*

U.S. Cl. 331—94.5 **2 Claims**



A control for maintaining uniform the luminous power output of a laser comprising a beam splitter, a temperature sensitive device and a device to vary the power input to the laser. The beam splitter diverts a portion of the output beam of the laser and directs the diverted portion of the beam onto the temperature sensitive device. The temperature sensitive device provides an electrical output which will vary to correspond with any variation in the output of the laser. The temperature sensitive device is electrically connected to the electrical input to the laser so that any variation in the output of the laser will vary the electrical input to the laser and thereby maintain the output of the laser substantially uniform.

3,624,543

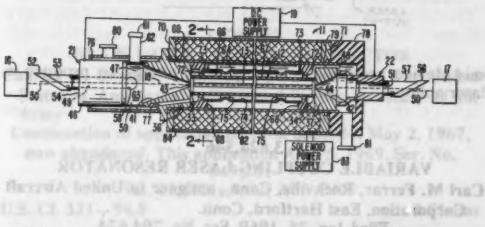
GAS COHERENT RADIATION GENERATOR WITH SEGMENTED CERAMIC DISCHARGE TUBE HAVING INTEGRAL GAS RETURN PATHS

Albert M. Rockwell, Jr., East Palo Alto, Calif., assignor to Laser Sciences, Inc., Bethel, Conn.

Continuation of application Ser. No. 641,965, May 29, 1967, now abandoned. This application Aug. 10, 1970, Ser. No. 62,635

Int. Cl. H01s *3/00*

U.S. Cl. 331—94.5 **10 Claims**



B_2O ceramic discs are provided with a centrally located bore and smaller bores radially spaced therefrom. The discs are joined together in a stack by copper rings brazed to facing metallized portions of adjacent discs of the stack. The copper rings are selected to have an inside diameter so that the rings will not mask the bores when the discs are assembled in a stack. The discs are joined to define a capillary discharge tube with the centrally located bore aligned along an optically straight path, and to have the radially spaced smaller bores intercommunicated to define gas return paths.

3,624,544

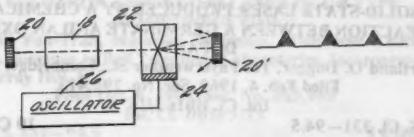
SELF MODE-LOCKING OF LASERS USING DYES

Anthony J. De Maria, West Hartford; David A. Stetser, Jr., Manchester, and Hans A. Heynau, Wapping, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 23, 1966, Ser. No. 536,898

Int. Cl. H01s *3/11*

U.S. Cl. 331—94.5 **5 Claims**



A laser is self mode-locked by placing an expander element comprising a saturable absorber which has a faster recovery time than the loop time delay of the laser within the optical cavity of the laser. Acoustic waves may be propagated within the saturable absorber to gate the laser output.

3,624,545

SEMICONDUCTOR PUMPED LASER

Monte Ross, Ladue, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

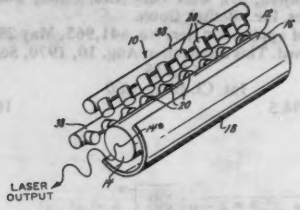
Filed Oct. 23, 1968, Ser. No. 769,836

Int. Cl. H01s *3/00*

U.S. Cl. 331—94.5 **18 Claims**

A laser device employing laser means to pump laser means and including a main laser element constructed of materials such as yttrium aluminum garnet (YAG) that is capable of lasing and one or more semiconductor diodes capable of

being stimulated to operate as lasers, said diodes being positioned to pump their outputs into the main laser element,



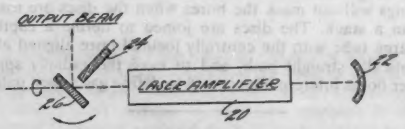
said device requiring relatively little energy to produce a laser action.

3,624,546

VARIABLE COUPLING LASER RESONATOR

Carl M. Ferrar, Rockville, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 28, 1969, Ser. No. 794,624
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **8 Claims**



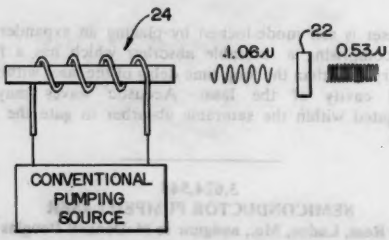
A pair of flat-reflecting mirrors are positioned at approximately right angles to each other with a small variable gap between the mirrors. The mirror pair is used as the output mirror for a laser oscillator. Variation of the gap between the mirrors will vary the extraction of laser beam power from the laser oscillator, and simultaneous rotation of both mirrors permits steering of the laser output beam.

3,624,547

SOLID-STATE LASER PRODUCED BY A CHEMICAL REACTION BETWEEN A GERMINATE AND AN OXIDE DOPANT

Cortland O. Dugger, 118 Fayerweather St., Cambridge, Mass.

Filed Feb. 4, 1969, Ser. No. 796,413
Int. Cl. H01s *3/16*
U.S. Cl. 331—94.5 **10 Claims**



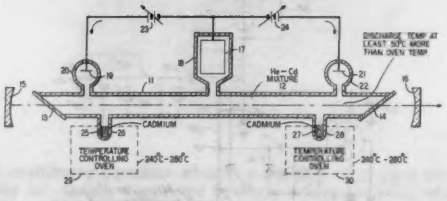
A system of germinates is provided which can be synthesized as single crystals, glasses or polycrystalline (powder) substances. New germinate compositions are disclosed as well as new processes for producing germinates. Luminescence observed in the germinates is believed to be caused by dopants or by self-activation. The germinates are employed as lasers, electronic semiconductive devices, thermoelectric devices and other applications.

3,624,548

DISCHARGE TUBE CONFIGURATION OF METAL-VAPOR ION LASER

Thomas P. Sosnowski, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Apr. 9, 1969, Ser. No. 814,617
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 **5 Claims**



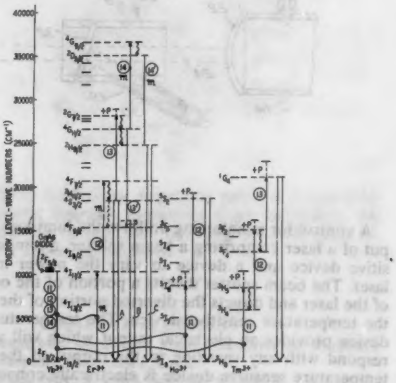
A discharge tube configuration for a cadmium-ion laser is disclosed which prevents deposition of cadmium on the interior surfaces of the Brewster's-angle windows of the discharge tube. A split excitation arrangement is employed with a cathode in the center and an anode at either end; and the phenomenon of cataphoresis is used to advantage by disposing a pair of reservoirs of metallic cadmium nearer to respective ones of the anodes than to the cathode. The reservoirs have openings adjacent the discharge path, and are controlled in temperature independently of the discharge tube temperature. An appropriately uniform density of cadmium ions as a minority constituent in an auxiliary gas of helium is also achieved by this arrangement in cooperation with the cataphoresis.

3,624,549

INFRARED DIODE-PUMPED VISIBLE LASER

Joseph E. Geusic, Berkeley Heights; Leo F. Johnson, Bedminster, and LeGrand G. Van Uitert, Morris Township, Morris County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Apr. 16, 1969, Ser. No. 816,614
Int. Cl. H01s *3/00*; C09k *1/00*
U.S. Cl. 331—94.5 **16 Claims**



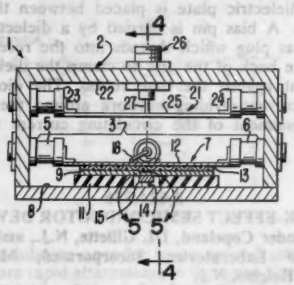
Laser action in the visible spectrum is achieved by use of an infrared-emitting GaAs diode. Second photon or higher order photon processes are involved.

3,624,550

MICROWAVE OSCILLATOR CIRCUIT FOR A BULK-EFFECT NEGATIVE-RESISTANCE DEVICE

Arthur B. Vane, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed June 16, 1969, Ser. No. 833,478
Int. Cl. H03b 7/14
U.S. Cl. 331—96 5 Claims



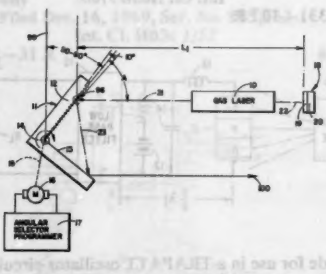
A microwave oscillator circuit for a high-power high-efficiency negative-resistance bulk-effect device is disclosed. The circuit includes a half-wavelength open-circuited length of stripline transmission line provided with variable lumped capacitors at opposite ends thereof, such capacitors serving to tune the stripline for a fundamental mode of resonance at the operating frequency of the oscillator. The low-impedance bulk-effect device is connected across the stripline at a point near the voltage null of the fundamental resonance. The characteristic impedance and the length of the stripline are adjusted such that the reactance of the line and the reactance of the capacitors at the ends allow the circuit to support full wave resonance at precisely twice the fundamental frequency and therefore develop a second harmonic voltage across the bulk-effect device to improve the conversion efficiency of the oscillator. Power is extracted from the oscillator circuit by means of a filter circuit tuned to pass the fundamental frequency and reject the harmonic. The invention herein described was made in the course of or under a contract or subcontract thereunder with the Department of the Air Force.

3,624,551

SELECTIVELY TUNABLE GASEOUS LASER

Richard A. Gudmundsen, Orange County, and James E. Rau, Anaheim, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed June 27, 1969, Ser. No. 837,249
Int. Cl. H01s 3/10, 3/05
U.S. Cl. 331—94.5 8 Claims



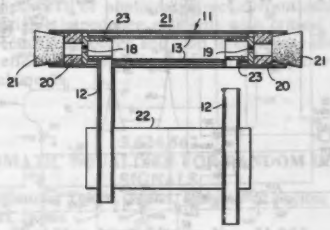
The invention relates to a laser device which comprises in combination laser generation means including a laser cavity which has a gaseous medium in at least a portion of the cavity and which produces directed energy comprised of a group of frequency bands. Also included are apparatuses which react with the directed energy, so designed so as to avoid translation and angular rotation of the directed energy. The apparatuses provide selective tuning of the laser cavity to at least one of the frequency bands. Included are equipments for programming the apparatuses so that the laser is tuned to either one of the frequency bands, to all of the frequency bands in a predetermined sequence, or to some of the frequency bands in a random access manner. An additional component interposed in the path of the directed energy beam enables the laser beam to act as a carrier of the electrical signals provided by this additional component.

3,624,552

GLASS LASER COUPLING REFLECTOR

Charles A. Bennett, Camden, N.J., assignor to The United States of America as represented by the Secretary of the Army

Continuation of application Ser. No. 635,984, May 2, 1967, now abandoned. This application Aug. 5, 1969, Ser. No. 849,281
Int. Cl. H01s 3/02, 3/05, 3/09
U.S. Cl. 331—94.5 2 Claims



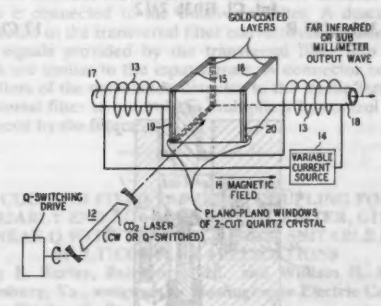
A method for fabricating a distortion-free glass laser device having generally concentric tubes, a reflective powder thereinbetween and port holes communicating between the tubes.

3,624,553

CYCLOTRON RESONATOR LASER IN A P-TYPE SEMICONDUCTOR

Nguyen Van-Tran, Matawan Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 6, 1969, Ser. No. 863,960
Int. Cl. H01s 3/18
U.S. Cl. 331—94.5 5 Claims



There is disclosed a cyclotron resonance laser of the type in which the Landau-level ladder is truncated either by the optical phonon or unequal spacings of the levels, in which the semiconductive crystal consists essentially of P-type ger-

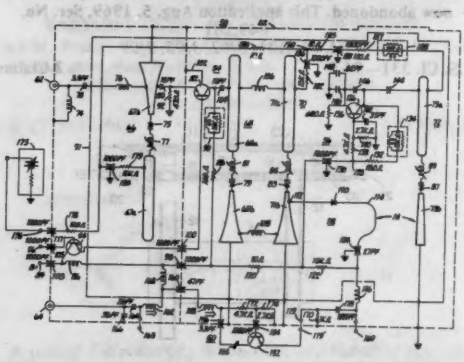
manium nearly compensated with antimony and in which, typically at low temperatures, the only effective acceptor level is a zinc energy level so deep in the band gap that the population inversion can be established by pumping radiation at 10.6 microns or 9.6 microns by a carbon dioxide molecular laser. In order to reduce the effective mass of heavy holes and to avoid reabsorption of the stimulated radiation by transitions between the heavy-hole and light-hole bands, suitable pressure, for example, uniaxial pressure, splits the heavy-hole and light-hole bands by about 0.02 electron volts.

3,624,554

ULTRAHIGH FREQUENCY OSCILLATOR UTILIZING TRANSMISSION LINE TUNABLE RESONANT CIRCUITS

Stephen Earl Hilliker, Mooresville, and John Barrett George, Indianapolis, both of Ind., assignors to RCA Corporation

Filed Mar. 23, 1970, Ser. No. 21,901
Int. Cl. H03b 5/18
U.S. Cl. 331—99 **13 Claims**



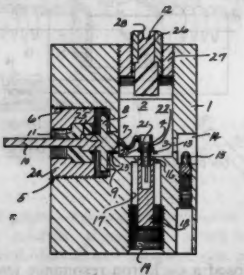
An ultrahigh frequency oscillator utilizes tunable transmission lines as a frequency determining network. The circuit includes a dielectric plate having a conductive section disposed on a first plate face opposed on the second plate face by a conductive ground plane. The oscillator active device has one of its electrodes coupled to a first point located on the conductive section and another of its electrodes coupled to a point on the ground plane located directly opposite the first point. A window may be provided in the ground plane with conductive areas disposed within the window area. The conductive areas provide circuit capacitances for the oscillator.

3,624,555

MICROWAVE CAVITY OSCILLATOR

Carl F. Klein, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Mar. 2, 1970, Ser. No. 015,478
Int. Cl. H03b 7/12
U.S. Cl. 331—107 R **17 Claims**



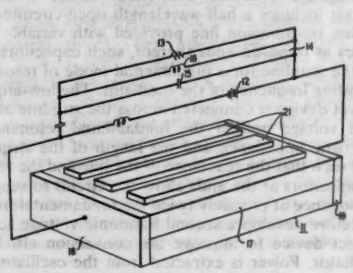
A microwave cavity oscillator includes a cavity block of a suitable metal having a cavity in one wall. A microwave diode is secured to the closed end of the open-ended cavity with a tubular center conductor secured to the diode. A dielectric tuning element of "Rexolite" is mounted for axial adjustment within the open end of the cavity. The element provides a direct capacitive coupling of the open-ended cavity to the center conductor to change cavity impedance and the frequency without loading the cavity with the consequent losses. A bias wire is connected to the center conductor and extends laterally through an opening to a bias disc within a recess. A dielectric plate is placed between the disc and recess base. A bias pin is carried by a dielectric member within a bias plug which threads into the recess. The pin bears on the back of the disc to clamp the dielectric plane and element against the base recess. The diode package defines a current-dividing network around the diode permitting adjustment of the circulating current through the diode.

3,624,556

BULK-EFFECT SEMICONDUCTOR DEVICES

John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 29, 1970, Ser. No. 50,567
Int. Cl. H03b 7/00
U.S. Cl. 331—107 G **4 Claims**



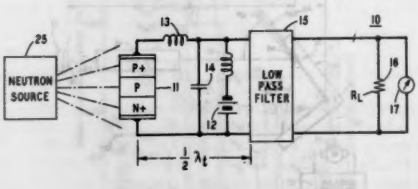
Traveling electric field domains are suppressed in a bulk-effect negative resistance device by including on the semiconductor wafer a plurality of dielectric stripes extending between the cathode and the anode contacts. The stripes tend to break up any incipient domains by reducing the localized velocity of the domain in the wafer region immediately contiguous to the stripe.

3,624,557

METHOD FOR MAKING DIODES FOR USE IN TRAPATT OSCILLATORS

Bernard C. De Loach, Jr., Murray Hill, and Donald L. Scharfetter, Morristown, both of N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Sept. 2, 1969, Ser. No. 854,678
Int. Cl. H03b 7/06
U.S. Cl. 331—107 R **5 Claims**



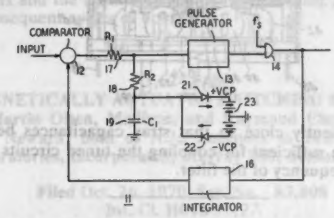
A diode for use in a TRAPATT oscillator circuit is made in a known manner with care being taken to minimize internal defects. Recombination centers are then introduced into the diode for reducing the diode lifetime to a sufficient value to give a reverse saturation current I_r appropriate for TRAPATT mode operation. The recombination centers may be introduced by high energy particle radiation, gold doping or quenching.

3,624,558

DELTA MODULATION ENCODER HAVING DOUBLE INTEGRATION

Stephen Joseph Brolin, Bronx, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 16, 1970, Ser. No. 3,312
Int. Cl. H03k 13/22
U.S. Cl. 332—11 D 3 Claims



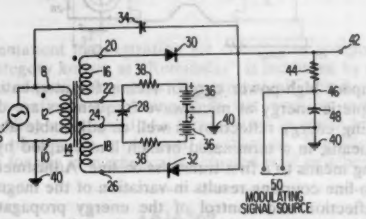
A delta modulation encoder has a second integrator for producing more rapid alternations in the noise signal, thereby removing a portion of the noise from the signal frequency band. The integrator is clamped to prevent excessive overshoots.

3,624,559

PHASE OR FREQUENCY MODULATOR USING PIN DIODES

Louis Carl Schaeperkoetter, Jr., McMurray, Pa., assignor to RCA Corporation

Filed Jan. 2, 1970, Ser. No. 254
Int. Cl. H03c 3/26
U.S. Cl. 332—24 12 Claims



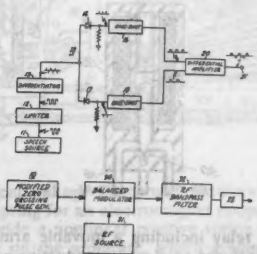
An angle modulator employing PIN diodes in a balanced circuit to provide improved linear angle variation over a wide range of modulating signal amplitudes and frequencies.

3,624,560

MODULATION TECHNIQUE FOR A LIMITED ENERGY SPEECH TRANSMISSION SYSTEM EMPLOYING PHASE REVERSAL OF ALTERNATE PULSES

Robert T. Milton, Burnt Hills, N.Y., assignor to General Electric Company

Filed Dec. 16, 1969, Ser. No. 885,562
Int. Cl. H03c 1/52
U.S. Cl. 332—31 R 6 Claims



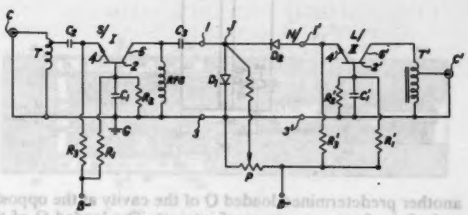
A modulation technique for a limited energy speech transmission system (LEST) is disclosed wherein either alternate speech zero crossing pulses or alternate radio frequency pulses are phase reversed prior to transmission.

3,624,561

BROADBAND APERIODIC ATTENUATOR APPARATUS

Ben H. Tongue, 41 Ferris Drive, West Orange, N.J.

Continuation of application Ser. No. 561,103, June 28, 1966, now abandoned. This application Feb. 24, 1970, Ser. No. 14,731
Int. Cl. H01p 1/22; H03g 3/10, 3/30
U.S. Cl. 333—6 3 Claims



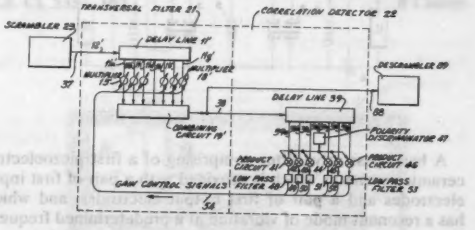
This disclosure deals with a broad band aperiodic attenuator using networks of nonlinear direct-current-energy controllable variable impedance elements with critical relationships between signal source and load to eliminate third order distortion effects and the like despite the presence of such nonlinear elements.

3,624,562

AUTOMATIC EQUALIZER FOR RANDOM INPUT SIGNALS

Noriaki Fujimura, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 19, 1970, Ser. No. 21,053
Claims priority, application Japan, Mar. 26, 1969, 44/22860
Int. Cl. H04b 3/04
U.S. Cl. 333—18 5 Claims



Input signals to a transversal filter are made random by the scrambler which is provided at the sender side. The transversal filter includes multipliers. A correlation detector having filters is connected to the transversal filter. A descrambler connected to the transversal filter converts the equalized random signals provided by the transversal filter into signals which are similar to the input signals. A connector connects the filters of the correlation detector to the multipliers of the transversal filter to control the multipliers by control signals produced by the filters.

3,624,563

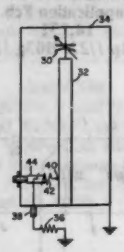
COIL AND FIXED TAP INPUT COUPLING FOR VARIABLY END-LOADED COAXIAL FILTER, GIVING LINEAR Q WITH TUNING CHANGE, SUITABLE FOR MULTICOUPLER APPLICATIONS

Henry E. Burley, Baltimore, Md., and William H. Martin, Leesburg, Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 3, 1969, Ser. No. 838,999
Int. Cl. H03h 13/00; H01p 7/04, 5/04
U.S. Cl. 333—24 R 7 Claims

An input coupling for a multicoupler filter wherein the inner conductor of the input cavity is connected to a genera-

tor through a choke which is connected at one end to the generator and at the opposite end by a tap to the inner conductor of the cavity. The inductance magnitude of the choke and the position of the tap on the inner conductor are selected to provide a predetermined loaded Q of the cavity at one end of the frequency range of interest and to provide



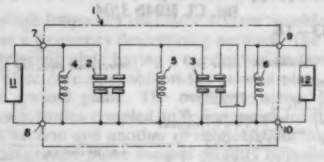
another predetermined loaded Q of the cavity at the opposite end of the frequency range of interest. The loaded Q of the cavity has been found to vary linearly over the frequency range of interest when the inductance magnitude of the choke and the position of the tap are determined in the aforementioned manner.

3,624,564

PIEZOELECTRIC CERAMIC BAND-PASS FILTER

Yukihiko Ise; Yuichi Kaname, and Kingo Wada, all of Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Jan. 20, 1970, Ser. No. 4,196
Int. Cl. H03h 9/00
U.S. Cl. 333—72 **5 Claims**



A band-pass wave filter comprising of a first piezoelectric ceramic resonator which is provided with a pair of first input electrodes and a pair of first output electrodes, and which has a resonant mode of vibration at a predetermined frequency, a second piezoelectric ceramic resonator which is provided with a pair of second input electrodes and a pair of second output electrodes, and which has a resonant mode of vibration at a said predetermined frequency, a first shunt inductance combined in parallel with said pair of first input electrodes, a second shunt inductance connected between said pair of first output electrodes and said pair of second input electrodes, and a third shunt inductance which is connected in parallel with said pair of second output electrodes and which is opposite in the polarity to said pair of second input electrodes.

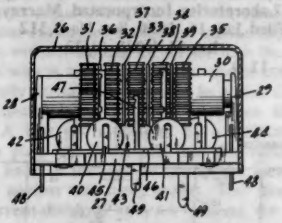
3,624,565

TOROIDAL FILTER

Samuel Harris, Cherry Hill; Edward C. Horton, Cherry Hill, N.J., and Otto P. Tader, Chicago, Ill., assignors to TRW Inc., Cleveland, Ohio

Filed Nov. 3, 1969, Ser. No. 873,549
Int. Cl. H03h 7/08
U.S. Cl. 333—76 **3 Claims**

Filter assembly particularly useful as an intermediate frequency filter for FM radios, the filter including a nonmagnetic form having a plurality of toroidally wound cores positioned in spaced coaxial relation along the form, with a capacitance for each of the coils providing a tuned circuit at a predetermined frequency, the spacing between the coils



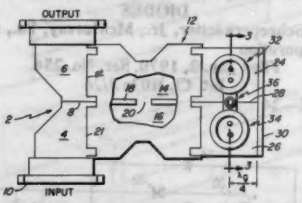
being sufficiently close so that stray capacitances between the coils are sufficient for coupling the tuned circuits at the operating frequency of the filter.

3,624,566

HIGH-POWER CONTROL MEANS FOR ATTENUATING MICROWAVE ENERGY

Henry W. Perreault, Chelmsford, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 24, 1970, Ser. No. 31,707
Int. Cl. H01p 1/22
U.S. Cl. 333—81 B **13 Claims**



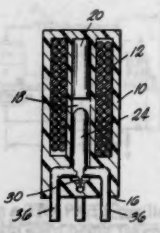
Compact high-power control means for attenuating electromagnetic energy at microwave frequencies are disclosed providing energy reflection as well as adjustable absorption load means, in a terminated branch line coupled by energy splitting means to a first transmission line. Adjustment of the load-to-line coupling results in variation of the magnitude of the reflection and control of the energy propagated in a transmission system with negligible insertion loss and substantially flat attenuation frequency response. The device exhibits no frequency-sensitive characteristics to thereby afford a broadband frequency response.

3,624,567

ELECTRIC RELAY

Merrill B. Gordon, 90 Colburn Court, Worthington, Ohio

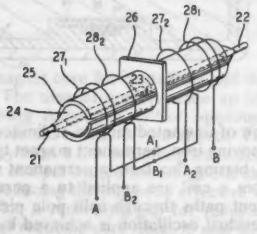
Filed Mar. 19, 1970, Ser. No. 21,069
Int. Cl. H01h 1/08
U.S. Cl. 335—58 **8 Claims**



An electric relay including a movable armature wherein the armature includes an electric conducting portion adapted to engage and bridge spaced electrical contacts at a predetermined armature position. During the conducting position of

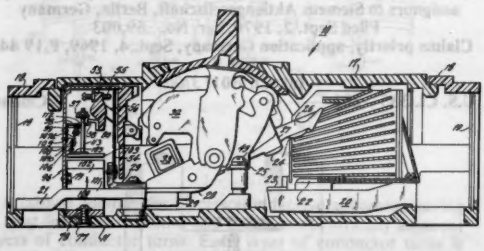
the armature, a mercury applicator mounted on the armature is immersed within a small reservoir of mercury wherein small particles thereof adhere to the applicator upon removal of the armature from engagement with the electrical contacts. Such disengagement of the armature from the contacts positions the applicator adjacent the effective contact surfaces, for random engagement therewith, wherein small mercury particles are transferred to the contact surfaces, to utilize mercury in establishing the electrical circuit between the contacts and the armature electrical conducting portion during subsequent cycles of operation.

3,624,568
MAGNETICALLY ACTUATED SWITCHING DEVICES
Karl Martin Olsen, Madison, and Raymond Christian Stoffers, Newark, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Oct. 26, 1970, Ser. No. 83,808
Int. Cl. H01h *51/27*
U.S. Cl. 335—153 **2 Claims**



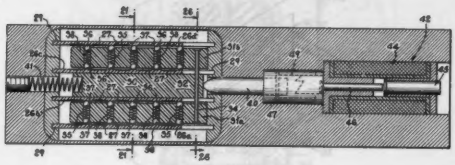
The remanent magnetization for cobalt-iron compositions in the category known as "Remendur" is increased by a critical series of processing steps. The most significant departure from conventional processing is in hot working reduction with the alloy maintained at a temperature in which both the α and γ phases are in thermal equilibrium. The alloys are designed for use in magnetically actuated reed switches.

3,624,569
NONLINEAR POSITIVE GRADIENT FORCE MECHANISM
Howard R. Shaffer, Glenside, Pa., assignor to ITE Imperial Corporation, Philadelphia, Pa.
Filed Feb. 9, 1970, Ser. No. 9,658
Int. Cl. H01h *7/08*
U.S. Cl. 335—172 **5 Claims**



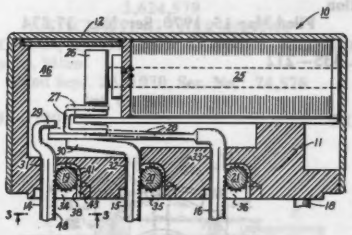
A mechanical linkage interposed between the armature and opening spring for an electromagnet cooperates with the spring to provide a nonlinear positive spring gradient component acting on the armature, which gradient component closely follows the flux force gradient generated by the minimum current required for pulling in the armature. Very near the end of the armature stroke the flux force gradient diverges from the spring gradient component to provide extra force which overcomes contact pressure spring forces.

3,624,570
ELECTROMECHANICAL RELAY
John S. Lory, Commack, N.Y., assignor to Lory Electronics, Inc., Deer Park, N.Y.
Filed Apr. 2, 1970, Ser. No. 25,132
Int. Cl. H01h *3/00*
U.S. Cl. 335—190 **9 Claims**



There is disclosed a multicontact electromechanical relay wherein a relatively large slidable switching assembly is moved by a relatively large slidable switching assembly is moved by a relatively small solenoid to "on" and "off" positions by successive operations of the solenoid through a ratchet-cam arrangement.

3,624,571
PRECISION METHOD AND MEANS FOR POSITIONING CONTACT POINTS IN MINIATURE ELECTRICAL RELAYS
Nathan H. Magida, Westport, Conn., assignor to Thermosen, Incorporated, Stamford, Conn.
Filed Dec. 15, 1969, Ser. No. 884,987
Int. Cl. H01h *1/48*
U.S. Cl. 335—197 **8 Claims**

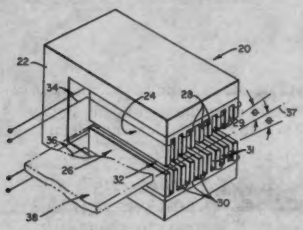


A small cylindrical hardened steel drive shaft having knurled serrations formed circumferentially in a continuous band around a central portion is rotatably mounted in bearing recesses formed in a molded plastic base of a miniature relay adjacent and at right angles to a contact pin hole formed in the base. A contact supporting pin inserted through the pin hole is brought into forced engagement with the serrated portion of the drive shaft which, when rotated, forms racklike mating serrations in the engaging surface of the relatively softer contact supporting pin. A wrench-engaging head formed on the external end of the drive shaft enables partial rotation of the drive shaft to impart linear motion of the order of 0.00005 inch, or less, to the contact supporting pin during final assembly of the relay. After all pins have thus been precisely positioned epoxy is applied to the drive shafts and pins to set and seal them in final position.

3,624,572
MAGNETS FOR GENERATING SPATIALLY VARYING MAGNETIC FIELDS

John C. Mallinson, and Charles W. Steele, both of Palo Alto, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Apr. 30, 1970, Ser. No. 33,214
Int. Cl. H01f 1/00
U.S. Cl. 335—209 8 Claims

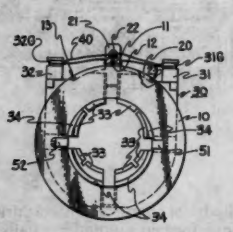


Magnet device for generating a spatially periodic magnetic field of decreasing magnitude, while employing a direct current DC source, or permanent magnets, as the field generating source of power. The invention contemplates at least one plurality of poles of selected configuration, adapted to receive a magnetic medium in magnetic bridging relation. A second plurality of poles of selected configuration may be disposed in confronting relation to the first plurality, in selected orientation therewith, defining therebetween a gap of selected dimensions and shape for receiving therethrough the magnetic medium. Accordingly, a magnetic medium passing along a preselected path adjacent the single plurality of poles, or through the gap between the confronting plurality of poles, experiences a spatially varying, symmetrical, magnetic field of selectable constant or varying magnitude. Several arrangements and various modifications are contemplated within the invention concepts to effect the desired operating parameters.

3,624,573
BLUE LATERAL MAGNET STRUCTURE

Paul Ernest Wiseman, Carmel, Ind., assignor to RCA Corporation

Filed May 15, 1970, Ser. No. 37,574
Int. Cl. H01f 3/02
U.S. Cl. 335—212 8 Claims

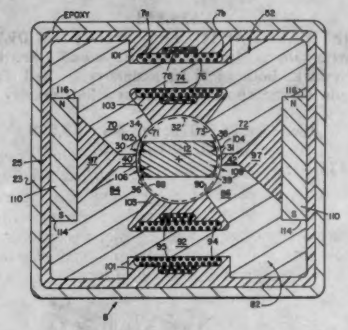


"Blue lateral" correction of beam positions in color kinescope is provided by structure having a pair of rotatable six-pole magnet rings eccentrically disposed about kinescope neck. Equal-and-opposite rotations of the rings provide lateral shift of blue beam and opposing lateral shifts of red and green beams, of an adjustable magnitude and sense. Magnet rings have peripheral tabs, and are oriented on a mount with the tabs positioned between the locations of a pair of posts projecting from mount surface. Drive cord, secured to each tab, is looped about the projecting posts. When either ring is rotated, drive cord causes other ring to undergo equal-and-opposite rotation.

3,624,574
ACTUATOR

Jean I. Montagu, Boston, Mass., assignor to General Scannings, Inc., Watertown, Mass.

Filed Nov. 24, 1969, Ser. No. 879,411
Int. Cl. H01f 7/08
U.S. Cl. 335—230 26 Claims

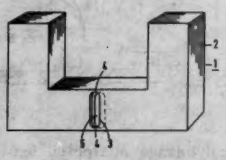


Elimination of unwanted motion of limited rotation actuators of the moving iron, permanent magnet type, is described. In this type, biasing flux from a permanent magnet and control flux from a coil are applied to a permeable armature along different paths through split pole pieces. Damping of unwanted residual oscillation is achieved by an independent short-circuited coil surrounding a permeable member in the control flux path. Other erratic movement is found to be due to bearing tolerances and is avoided by intentional misalignment or biasing of the armature shaft relative to its bearings, this also improving bearing life. Telescoped construction of a torsion bar within a tube which mounts armature laminations between bearings is shown. Compensation for improper relation of movement vs. current is achieved by a distinctly different shaping of the curvature of portions of the surfaces relative to other cylindrical portions of the surfaces defining the gaps between armature and pole pieces, obtained for large size armatures by offcenter machining. In various combinations these features achieve improved sets of characteristics relating to overall size and the amount of delivered torque, deflection, damping, linearity and heating obtained. Electro-optical scanners and choppers having resonant frequencies in the 1,000 Hz. range are described.

3,624,575
LAMINATED MAGNET CORE

Otto Muller, and Gunter Rauter, both of Amberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

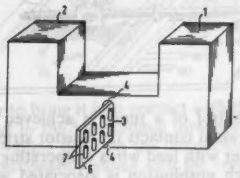
Filed Sept. 2, 1970, Ser. No. 69,003
Claims priority, application Germany, Sept. 4, 1969, P 19 44 888.5
Int. Cl. H01f 3/00
U.S. Cl. 335—281 7 Claims



A laminated magnet core for contactors or the like has a working airgap. The magnet core is made up of stacked metal sheets having respective slitlike openings extending across a portion of the width of the sheets, the openings

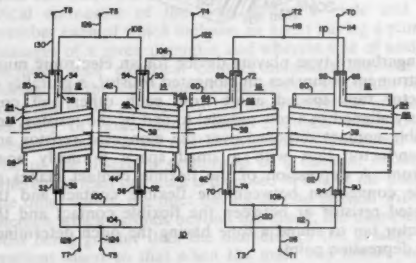
being at least partly overlapping and jointly defining a gap for reducing the core remanence.

3,624,576
LAMINATED MAGNET CORE
Gunther Rauter, Amberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Sept. 2, 1970, Ser. No. 69,002
Claims priority, application Germany, May 2, 1970, P 20 21 659.5
Int. Cl. H01f 3/00
U.S. Cl. 335—281 4 Claims



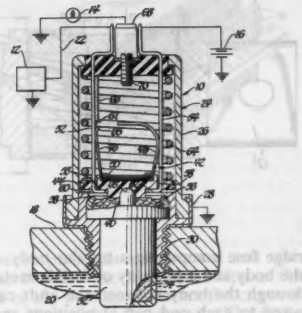
A laminated magnet core for contactors and the like has a working airgap. The magnet core is made up of a stack of metal sheets having respective slitlike openings extending across a portion of the width of the sheets. The openings overlap and jointly form a slot extending transversely through the core. At least one perforated ferromagnetic sheet extends into the slot for reducing the magnetic effective width of the slot so as to define a remaining gap for reducing the core remanence and for reducing core losses in said core.

3,624,577
TAPPED MULTILAYER WINDING FOR ELECTRICAL INDUCTIVE APPARATUS
John T. Barrow, Jr., Rolla, Mo., and Robert D. Morris, Sharon, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 17, 1969, Ser. No. 867,319
Int. Cl. H01f 21/12, 15/10, 27/28
U.S. Cl. 336—150 7 Claims



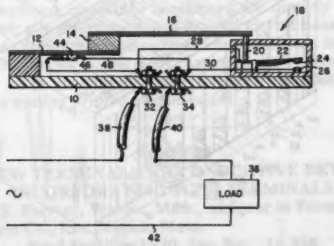
A tapped winding for electrical inductive apparatus having at least first, second, third and fourth concentrically adjacent layers of conductor turns. Each layer of conductor turns is formed of first and second axially interleaved conductors, the ends of which extend outwardly from the axial ends of the winding structure. Predetermined adjacent ends of the first and second conductors are interconnected between predetermined adjacent layers, at each axial end of the winding structure, to provide a single series circuit through the winding which sequentially traverses the first, second, first, second, third, fourth, third and fourth layers, with the interconnected ends being adapted for connection to external tap leads.

3,624,578
THREE FUNCTION THERMAL-ELECTRICAL SWITCH
Alan F. Stocker, North Tonawanda; Lynn S. Brock, Williamsville, and Raymond E. Graf, Youngstown, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 23, 1970, Ser. No. 91,681
Int. Cl. H01b 37/52
U.S. Cl. 337—299 7 Claims



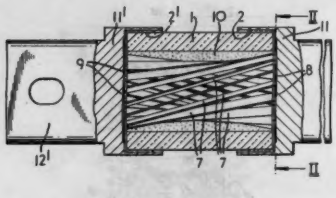
A switch that is responsive to both the temperature within an enclosure and the ambient temperature near the exterior of the enclosure. A wax-mixture-filled container at one end of the switch housing monitors the internal temperature of the enclosure and moves a contact assembly within the housing along a pair of terminals in response to the monitored temperature. A bimetal member in the contact assembly effects an electrical connection between the terminals in response to the ambient temperature as sensed within the switch. An insulating member precludes the electrical connection when the wax mixture is above a certain temperature. When the wax mixture is at an even higher temperature the contact assembly completes another current path between one of the terminals and a third terminal.

3,624,579
ANTICIPATING THERMOSTAT
Elmer A. Carlson, Agoura, Calif., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Sept. 23, 1970, Ser. No. 74,578
Int. Cl. H01h 61/00
U.S. Cl. 335—100 5 Claims



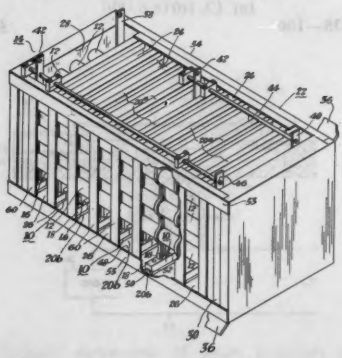
A room thermostat for heating systems having an anticipating heater energized when the thermostat is not calling for heat and acting on an auxiliary temperature sensing element acting in a reverse sense from the main sensing element. A two-wire thermostat is thus provided which has a fixed value anticipating heater that need not be changed to match the load.

3,624,580
CARTRIDGE FUSES
William James Elliott, Loughborough, England, assignor to Brush Electrical Engineering Company Limited, Loughborough, England
Filed Feb. 11, 1970, Ser. No. 10,443
Claims priority, application Great Britain, Mar. 1, 1969, 11,079/69
Int. Cl. H01h 85/12
U.S. Cl. 337—161 7 Claims



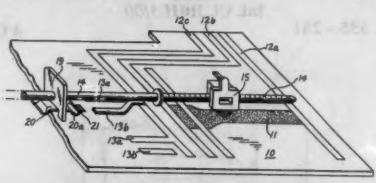
A cartridge fuse comprising a tubular body, a pair of end caps for the body and a plurality of fusible metallic strips extending through the body between the ends caps, the strips being secured to each end cap at positions spaced apart in the circumferential direction thereof, such that the strips are spaced apart from each other along their whole lengths intermediate the end caps, the position of one end of each strip being circumferentially staggered with respect to the other end thereof. Also one end portion of each strip is inclined to a radius of the end cap to which it is secured in one direction circumferentially of the end cap and the other end portion of the strip is inclined to a radius of the end cap to which it is secured in the other direction circumferentially of the end cap, whereby an intermediate portion in the length of the strip is directed widthwise of the strip radially of the tubular body to reduce thermal shock on the body when the fuse blows.

3,624,581
SUPPORTING AND INSULATING ARRANGEMENT FOR ELECTRICAL RESISTOR OR THE LIKE
Albert G. Owen, Sun City, Ariz., assignor to Mosebach Manufacturing Company, Pittsburgh, Pa.
Filed Apr. 4, 1969, Ser. No. 813,513
Int. Cl. H01c 1/08
U.S. Cl. 338—57 5 Claims



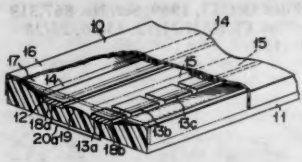
I disclose an electrical resistor having a plurality of elongated resistor elements arranged in a closely spaced generally parallel array and connected electrically for electrical loading purposes. A supporting and insulating arrangement for the elements is disposed intermediate the ends of the elements. The arrangement has a plurality of metallic supporting straps and insulating members detachably joined.

3,624,582
ROTATABLE PUSHBUTTON CONTROL OF MOVABLE RESISTOR CONTACT AND OF SWITCH CONNECTIONS THERETO
Sadayoshi Iwasaki, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Oct. 27, 1969, Ser. No. 869,717
Claims priority, application Japan, Nov. 20, 1968, 43/101570
Nov. 11, 1968, Japan, 43/98459
Int. Cl. H01c 9/08
U.S. Cl. 338—129 11 Claims



Pushbutton control of a tuner is achieved by selectively positioning individual contacts on resistor strips formed on a baseplate together with lead wires cooperating with those resistor strips. Each pushbutton is associated with a shaft on which a resistor-contactor is adjustably mounted, the pushbutton in its known position being normally rotationally disengaged from the shaft but being rotationally engaged with the shaft when pushed inwardly. The shaft actuated by a given pushbutton moves a flexible ribbon which serves as a tuning indicator. One of the pushbuttons controls a rotary switch in which springs move into corners of an appropriately shaped opening in order to hold the switch in its various operative positions.

3,624,583
PLAYING DEVICES FOR ELECTRONIC MUSICAL INSTRUMENTS
Akira Nakada, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan
Filed Feb. 17, 1970, Ser. No. 12,096
Claims priority, application Japan, Feb. 20, 1969, 44/12440
Int. Cl. H01c 9/06
U.S. Cl. 338—69 6 Claims

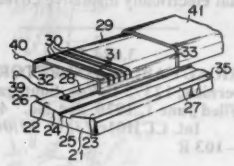


A fingerboard-type playing device for an electronic musical instrument comprises an elongated resistor, a plurality of conductor taps spaced apart from each other and contiguously aligned in a row parallel to and by the resistor, and a flexible contact disposed over the elongated resistor and the conductor taps with a small space normally apart therefrom. A depression of the flexible contact makes an electric connection between the flexible contact and the elongated resistor or between the flexible contact and the conductor tap to sound a tone having the pitch determined by the depression point.

3,624,584
VARIABLE RESISTANCE DEVICE FOR AN ELECTRONIC MUSICAL INSTRUMENT
Junji Ohno, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan
Filed Feb. 13, 1970, Ser. No. 11,283
Claims priority, application Japan, Feb. 20, 1969, 44/14390
Feb. 20, 1969, 44/14391; Feb. 20, 1969, 44/14392; Apr. 15, 1969, 44/34149; Apr. 17, 1969, 44/34932
Int. Cl. H01c 9/00
U.S. Cl. 338—69 13 Claims

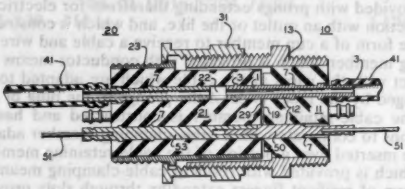
A variable resistance device adapted for use in a portamento performance combined with an electronic musical in-

strument comprises a narrow base made of electrical insulating material, an elongated resistance element disposed on said base and used as an element for determining the oscillating frequency of a tone signal generator and a flexible sheet-like conductor arranged above said resistance element at a prescribed space from each other. When a finger depressing



the conductor to bring it into contact with the resistance element is shifted in the longitudinal direction of the element, resistance prevailing between the conductor and one end of the element successively varies with the resultant continuous change in the oscillator frequency, thereby obtaining the portamento effect.

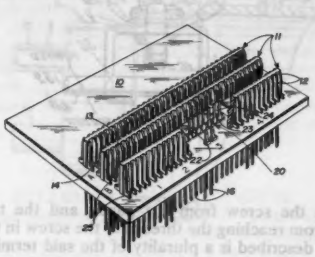
3,624,585
DUAL ELECTRICAL AND FLUIDIC CONNECTOR ASSEMBLY
Edward Kokalas, and Edward S. Yablonski, both of Sidney, N.Y., assignors to The Bendix Corporation
Filed Mar. 27, 1970, Ser. No. 23,124
Int. Cl. H01r *3/04*
U.S. Cl. 339—16 R **4 Claims**



A quick-connect connector for connecting a plurality of fluid and electrical conductors. In combination with an electrical connector of the type having a male and female member each of which includes an insert having a plurality of passages of a given diameter and wherein one of said inserts includes male electrical contact members disposed in the passages of the inserts and female electrical contact members disposed in the passages of the other insert for connecting a plurality of noncommunicating electrical conductors and predetermined circuit relationship, the improvement wherein one of the inserts is comprised of a resilient material and wherein at least one duct is disposed in one of the passages of the other insert, the duct having an end portion with a boss thereon which extends beyond the insert, the diameter of the boss being greater than the diameter of the passage in said resilient insert so that when the male and female members are in mated relationship, the boss on the duct is in pressurized contact with the wall of the passage of the resilient insert to form a fluidtight seal therebetween whereby said connector connects in a predetermined relationship electrical and fluid conductors.

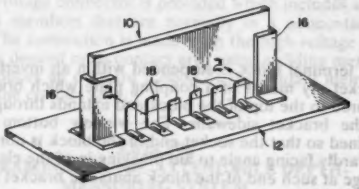
3,624,586
INTEGRATED CIRCUIT CONNECTOR SYSTEM
Frederick T. Inacker, Dallas, Tex., assignor to Ammon & Champion Company, Inc., Dallas, Tex.
Filed Feb. 9, 1970, Ser. No. 9,611
Int. Cl. H01l *1/14*; H02b *9/00*; H05k *7/08*
U.S. Cl. 339—17 CF **19 Claims**

A plurality of insulative strips having recessed contact-receiving grooves formed in opposite sides are mounted upon the upper face of an insulative mounting board parallel to one another to define spaced areas therebetween. A metal contact is mounted with a connector portion lying within each one of the contact-receiving grooves of the insulative strips and with the shank portion extending through to the underside of the insulative mounting board. The contact-receiving grooves are spaced from one another at a distance to grip the leads of a dual in-line integrated circuit package.



Integrated circuit packages are inverted and inserted down into the space between the insulative strips so that the conductive leads of the packages contact the connector portion of the contacts lying within the grooves. The contacts on opposite sides of the strips are in conductive engagement with the leads of different packages. Adjacent insulative strips are so spaced from one another that the integrated circuit devices are held within the mounting areas by firm frictional engagement between the leads and the contacts.

3,624,587
CLINCHED-WIRE INTERCONNECTION DEVICE FOR PRINTED CIRCUIT BOARDS
Albert R. Conrad, Thousand Oaks, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Feb. 9, 1970, Ser. No. 9,632
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 M **10 Claims**

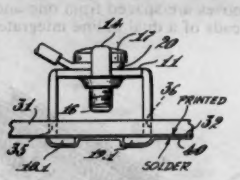


The disclosed connector is adapted for directly mounting and electrically interconnecting printed circuit boards. Loops of resilient conductive wire project into openings in a receiving printed circuit board such that oppositely disposed pairs of these loops in each opening engage fingerlike insertion strips of a mating printed circuit board.

3,624,588
SCREW TERMINAL AND CONDUCTIVE DEVICES INCORPORATING SUCH TERMINALS
Edward B. Farmer, Waban, Mass., assignor to Farmer Elecric Products Co., Inc., Natick, Mass.
Filed Feb. 26, 1970, Ser. No. 14,338
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 C **9 Claims**

The terminal herein described is stamped from a single blank with a rectangular plate which is tapped for a terminal screw, which has two ears bent over on opposite sides of the head of a screw inserted in the tapped plate for holding a wire, and which has on opposite sides of the plate, between the two ears, two supporting legs bent over oppositely to the ears. The legs are somewhat higher than the fully inserted screws, and each leg has a solid rectangular tab extending between two coplanar ledges on either side of the tab. The

tabs are inserted in round holes of a supporting panel with printed circuitry to project at the circuitry side, and the tabs are then bent over to hold the terminal with the ledges pressed against the panel. The tabs of the connector which rest against parts of the printed circuit opposite the ledges, are then wave soldered to the circuit, whereby the legs which



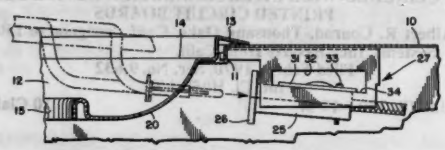
distance the screw from the panel, and the tabs, prevent solder from reaching the threads of the screw in the plate. Further described is a plurality of the said terminals in combination with a panel which supports a connector for edge contacts of a printed circuit board and has printed circuitry contacting the terminals and edge contacts of the board.

3,624,589

RANGE ELEMENT TERMINAL BLOCK AND BRACKET ASSEMBLY

Claude Drouin, Montmagny, P.Q., Canada, assignor to The Tappan Company, Mansfield, Ohio

Filed Dec. 4, 1969, Ser. No. 881,966
Int. Cl. H01r *13/60*
U.S. Cl. 339—34 **4 Claims**



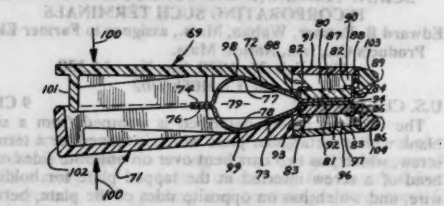
A terminal block is suspended within an inverted channel bracket my means of a coupling plate which bridges and is secured to the top of the block and extends through windows in the bracket sidewalls. The window bottom edges are inclined so that the socket end of the block is normally at an upwardly facing angle to aid plugging in of the element and a flange at such end of the block abuts the bracket sides to act as a positioning stop.

3,624,590

CLAMP FOR DISPOSABLE GROUND PLATE ELECTRODE

Lee R. Bolduc, Minneapolis, Minn., assignor to Medical Plastics, Inc., Minneapolis, Minn.

Filed Sept. 25, 1968, Ser. No. 762,582
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 R **9 Claims**



An electrosurgical unit using high-frequency currents having an active electrode and a patient indifferent ground plate. The plate is a disposable flexible ground plate electrode having an electrically conductive skin releasably attached to a clamp connected to a line leading to a power supply. A test circuit tests the electrical connection between the clamp and the skin of the plate electrode. The releasable connector has a flat contact plate in surface engagement with the skin of the ground plate electrode. One form of the connector has a pair of connected plate contacts attached to and pivotally mounted on flat electrically insulative covers.

3,624,591

ELECTRICAL CABLE CONNECTOR ASSEMBLY

Harry P. Buberniak, 12372 DeVoe, Southgate, Mich.

Filed June 1, 1970, Ser. No. 42,384
Int. Cl. H01r *13/58, 33/06*
U.S. Cl. 339—103 R **9 Claims**

A cable connector assembly to connect an electrical cable to a plug or a light socket and positively securely retain the cable in assembly with the plug or socket. The assembly is comprised of a main body portion defining the plug or socket provided with prongs extending therefrom for electrical connection with an outlet or the like, and which is constructed in the form of a cup member to receive a cable and wire retaining member which is provided with conductor means in contact with the wires of the cable which are adapted to be engaged by the inner ends of the prongs of the plug or socket. The cable-retaining member is constructed and has provisions to cooperate with a cable-clamping member adapted to be inserted over a portion of the cable-retaining member and which is provided with resilient cable-clamping means in the form of resilient fingers extending through slots provided in the cable-retaining member, and a pressure ring is provided having internal cam surfaces located on varying radii adapted to be pushed over the clamping and cable-retaining member to cam the resilient fingers inwardly through the slots in the cable-retaining member into engagement with the cable to lock the cable to the cable-retaining member; the assembly of the electrical connector is completed by a sealing ring and an end cap adapted to be screwed into the main body portion of the plug or light socket to thereby confine the cable retaining and clamping members in between them. All of the parts, except for the prongs on the plug or light socket and the wire-connecting means in the cable-retaining member, are made of a nonconductive material.

3,624,592

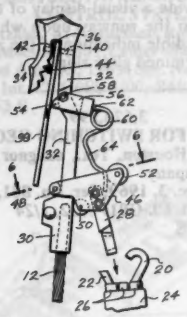
HOT STICK OPERABLE CONNECTOR FOR ATTACHMENT TO AND DETACHMENT FROM A HIGH-VOLTAGE CONDUCTOR

Louis M. Walter, 16709 Highway 99, Lynnwood, Wash.

Filed Aug. 22, 1969, Ser. No. 852,343
Int. Cl. H01r *11/14*
U.S. Cl. 339—109 **10 Claims**

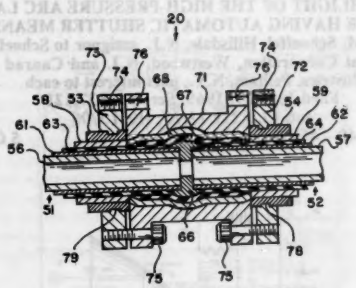
There is disclosed a connector which may be attached to or detached from a bare high-voltage conductor through the use of a "hot stick" which is manually operable by an electrician but which insulates the electrician from the conductor. The connector includes a shank member and a first leg member which are fixedly secured to each other to form an inverted V-shaped hook. A second leg is pivoted to, and at the throat of, the hook by a cross pin carried by the shank member and the first leg. A compression spring urges the second leg away from the first leg to form a normally open hook. The second leg is movable toward the first leg by a lever-operated cam which is pivoted to, and carried by, the

shank member. The means to operate the lever of said lever-operated cam means includes a carriage mounted for travel



on said shank member, a spring member connected as an extension of said lever, and a roller on said carriage traveling on an end portion of said spring.

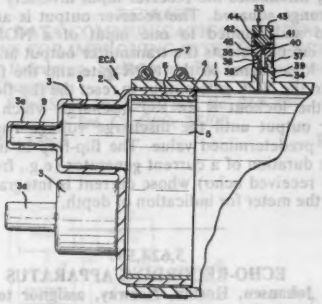
3,624,593
HIGH-VOLTAGE, HIGH-CURRENT COAXIAL CONNECTOR
Gamon B. Hayward, P.O. Box 609, Del Mar, Calif.
Filed Dec. 15, 1969, Ser. No. 884,845
Int. Cl. H01r *17/04, 13/00*
U.S. Cl. 339—112 L **1 Claim**



A high-voltage, high-current coaxial connector utilized with a coaxially coupled parallel capacitor bank coupled through an electronic switch.

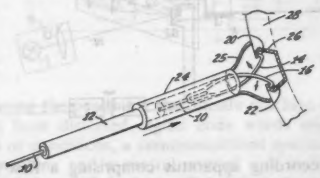
3,624,594
ELECTRICAL CONNECTOR ASSEMBLY
John Omer Trimble, Malvern; Arthur Llewellyn Mueller, Berwyn; George Edwin Pupek, Norristown, and William Francis Doyle, Philadelphia, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 14, 1969, Ser. No. 799,320
Int. Cl. H01r *7/00*
U.S. Cl. 339—116 C **1 Claim**

An electrical connector assembly comprises a sleeve within which electrical terminals effect electrical connections between conductors of cables. The cables enter the sleeve



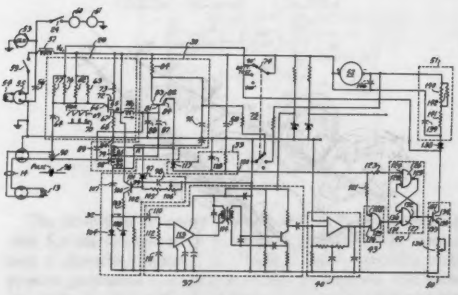
through heat-shrinkable members that are heat shrunk and sealed onto the cables.

3,624,595
HIGH-VOLTAGE CONNECTOR
Walter C. Severin, 2626 West Ave., Lancaster, Calif.
Filed Aug. 28, 1969, Ser. No. 853,690
Int. Cl. H01r *11/22*
U.S. Cl. 339—201 **6 Claims**



A high-voltage connector is provided which includes a pair of contact members that are normally in a noncontacting position. The connection is made from the high-voltage conductor to a desired open contact area using a sliding member which produces an outward motion of the contact members to engage the contact area.

3,624,596
ULTRASONIC RANGE-ATTENUABLE DEPTH-MEASURING SYSTEM
Harry R. Dickenson, East Elmhurst, and George S. Hamilton, St. Albans, both of N.Y., assignors to Sona Labs, Inc., Brooklyn, N.Y.
Filed Mar. 10, 1970, Ser. No. 18,087
Int. Cl. G01s *9/68*
U.S. Cl. 340—3 R **7 Claims**



An ultrasonic depth-measuring system wherein a highly accurate pulse-generating timing circuit having voltage com-

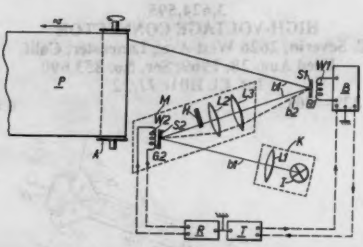
pensation provides a keying signal for Hartley-type oscillator whose output is applied to an underwater transducer. A portion of the transmitter output is also applied to the receiver, lockout circuit, and to a variable-range attenuator which effectively attenuates the receiver input inversely proportional to the range squared. The receiver output is amplified and detected and applied to one input of a NOR gate. The lockout circuit detects the transmitter output and provides a lockout logic signal to the NOR gate and the flip-flop connected to the NOR gate output to reset the flip-flop. The output of the lockout is an RC discharge which blocks the receiver output until the discharge voltage has decreased below a predetermined value. The flip-flop in turn controls the time duration of a current generator (e.g., from transmit pulse to received echo) whose current is integrated and applied to the meter for indication of depth.

3,624,597

ECHO-RECORDING APPARATUS

Arne J. Johansen, Horten, Norway, assignor to Forsvarets Forskningsinstitutt, Horten, Norway

Filed Aug. 19, 1969, Ser. No. 851,271
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 **12 Claims**



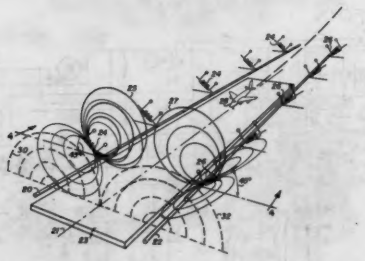
Echo-recording apparatus comprising a first mirror galvanometer adapted and disposed to effect a time-base scan of a light beam across a paper strip, which is moving in its longitudinal direction, the light beam being intensity modulated by a light modulator including a second mirror galvanometer or a Kerr cell, and said recording apparatus also including digital control means for control of the time-base scan in conjunction with the triggering of an auxiliary pulse transmitter connected to the apparatus.

3,624,598

MAGNETIC POSITION DETECTION METHOD AND APPARATUS

John V. Foster, Los Altos, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Aministration

Filed June 20, 1969, Ser. No. 835,058
Int. Cl. G08g *5/00*
U.S. Cl. 340—26 **18 Claims**



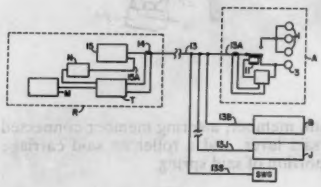
A method and apparatus for establishing the position of an aircraft or other vehicle with reference to a predetermined set of coordinates using magnetic field techniques. Magnetic fields are generated by long linear conductors and magnetic dipole means and the ratio of the fields created thereby is measured at a given point to determine the distance between the sources and the given point. In a preferred embodiment, the electrical signals obtained by the apparatus of the invention are used to provide a visual display of the relative position of an aircraft to the runway upon which it is to land and/or a visual or audible indication of the aircraft's position relative to a predetermined glide slope.

3,624,599

APPARATUS FOR SWITCHING GEOPHONES

Haines C. Hibbard, Houston, Tex., assignor to Esso Production Research Company

Filed Dec. 3, 1969, Ser. No. 881,781
Int. Cl. G01v *1/22, 1/24*
U.S. Cl. 340—15.5 TS **4 Claims**



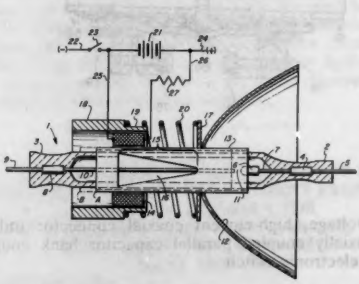
Apparatus for switching a seismic recorder from an areal array of geophones to a direct arrival seismic wave detector, controlled a radio signal at the recorder location which is transmitted to the geophone location to control the apparatus. The array of geophones is normally connected to a conductor line leading to the recorder. When the radio signal is detected, the direct arrival detector is connected to the line. Either detection of direct arrivals or passage of a given time interval from detection of the radio signal operates to reconnect the areal array to the line.

3,624,600

SEARCHLIGHT OF THE HIGH-PRESSURE ARC LAMP-TYPE HAVING AUTOMATIC SHUTTER MEANS

Dietmar M. Schoeffel, Hillsdale, N.J., assignor to Schoeffel Instrument Corporation, Westwood, N.J. and Canrad Precision Industries, Pelham, N.Y., part interest to each

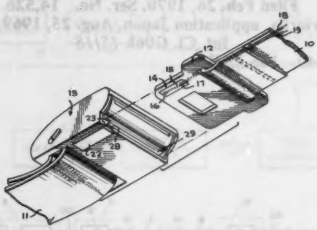
Filed June 27, 1969, Ser. No. 837,121
Int. Cl. F21v *11/18;* H01f *3/00*
U.S. Cl. 240—46.05 **5 Claims**



A searchlight comprising a high-pressure compact arc-type arc lamp containing a high-pressure ionizable atmosphere and a pair of electrodes spaceable from each other for establishing an arc discharge therebetween a reflector mounted on the lamp with the portion of the lamp containing the arc producing ends of the electrodes positioned in the reflector at the reflector optical axis e.g., at the focal point, an automatic shutter for instantaneously shielding the after glow of the lamp when the lamp operating current is interrupted or shutoff, the shutter being in the form of a shielding

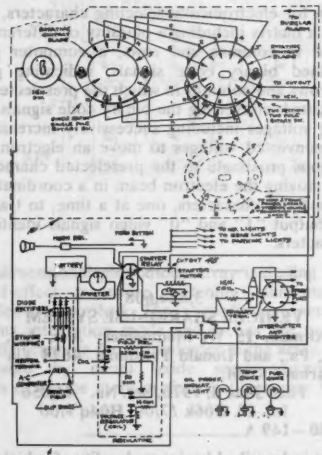
tube reciprocatingly movable over the lamp along the lamp axis to selectively cover and uncover the arc discharge providing ends of the electrodes.

3,624,601
VEHICLE SEATBELT WARNING AND IGNITION CONTROL SYSTEM
William S. Routzahn, 614 Marshall Road, Glen Burnie, Md., and Denis S. Moeser, 1301 Centerville Ave., Belleville, Ill.
Filed Aug. 13, 1969, Ser. No. 849,661
Int. Cl. G08b *5/00;* **B60q** *1/00*
U.S. Cl. 340—52 E **1 Claim**



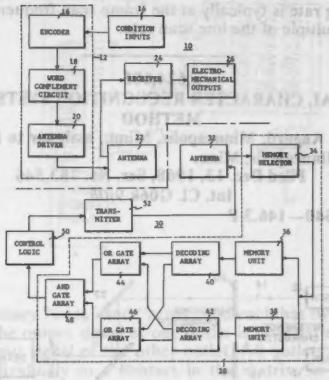
A safety seatbelt that is constructed so that a vehicle cannot be operated until the seatbelt is properly fastened about a person, and wherein the seatbelt is electrically connected to the ignition switch of a vehicle, so that the circuit cannot be completed and the engine operated until the seatbelt is properly connected in place. In one form of the device, a seatbelt is provided for aircraft, buses and trains, and wherein a lighting system of warning panel is provided to indicate when one or more passengers does not have his or her seatbelt engaged.

3,624,602
DECOY ANTI-CAR-THEFT SYSTEM
Herbert C. Le Doux, 136 Seaman Ave., New York, N.Y.
Filed Feb. 10, 1970, Ser. No. 10,156
Int. Cl. G08b *13/00;* **B60r** *25/00*
U.S. Cl. 340—63 **1 Claim**



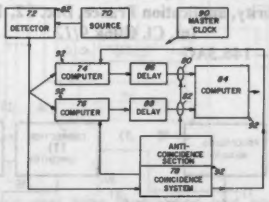
An accessory assembly for an automotive vehicle for prevention of car theft, the device comprising a unit mounted on the dashboard and another unit mounted in the engine compartment, each of the units having a manually operated selector switch for closing in series an electrical circuit between the vehicle power battery and the vehicle starter, and each of the selector switch units having a relatively large number of selector switch positions so to increase the improbability of aligning the correct positions so to close the circuit.

3,624,603
DIGITAL DATA COMMUNICATIONS SYSTEM WITH MEANS FOR IMPROVING SYSTEM SECURITY
William E. Delcomyn, Melbourne, Fla., assignor to General Electric Company
Filed Sept. 16, 1969, Ser. No. 869,991
Int. Cl. G08c *25/00*
U.S. Cl. 340—146.1 **10 Claims**



For reducing the possibility that unsafe machine operation may result from distorted digital code words representing commands or conditions, a communications system in which both the machine and a central control unit include transceivers which repetitively transmit a digital word sequence consisting of a digital word and its complement. Decoder logic in the other transceiver must recognize both an acceptable digital word and the complement of that word before machine operations will be ordered or initiated.

3,624,604
IMAGE ANALYSIS
David William Gibbard, Royston, England, assignor to Image Analysing Computers Limited, Royston, England
Filed Oct. 30, 1970, Ser. No. 85,384
Claims priority, application Great Britain, Oct. 31, 1969, 53,403/69
Int. Cl. G06k *9/06*
U.S. Cl. 340—146.3AC **30 Claims**



The invention relates to image analysis systems which provide for the computation of primary and secondary parameters of detected features in a field of view, typically relating to their geometrical or densitometric properties. The primary parameters relating to each feature are accurately associated therewith by means of a coincidence circuit which generates an anticoincidence pulse immediately following the comple-

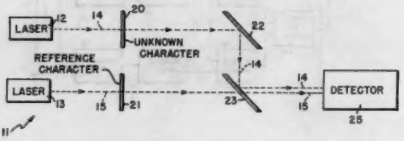
tion of scanning of each detected feature in the field of view. A first computer generates the primary associated parameters in response to the anticoincidence pulse and a second computer is provided to generate the secondary parameter or parameters from the output from the first computer. The first mentioned computer means may comprise a number of computers operated in parallel synchronism to provide their different outputs simultaneously. Alternatively a single computer may be used which is capable of being switched to perform each of the different functions to generate the primary parameters and the information required for their generation is supplied during a corresponding number of successive intervals of time to the input of the first computer and the output is stored in a corresponding number of signal stores which are all addressed at the anticoincidence point. The switching rate is typically at the frame scan frequency or is at a high multiple of the line scan rate.

3,624,605

OPTICAL CHARACTER RECOGNITION SYSTEM AND METHOD

Roger L. Aagard, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 13, 1968, Ser. No. 783,546
Int. Cl. G06k *9/08*
U.S. Cl. 340—146.3 P **14 Claims**



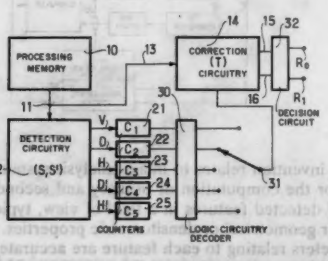
A system and method for identifying an unknown character by superimposing two coherent light beams containing diffraction patterns of an unknown and a reference character. The two light beams have either different phase or frequency so that the diffraction patterns generate a beat frequency in areas where they overlap. When the reference and unknown characters are identical, there is total overlap of the two diffraction patterns and the beat frequency intensity of the overlapped patterns is a maximum. When the reference and unknown characters are dissimilar, the intensity of the beat frequency is less than a maximum; the actual value depending upon the degree of similarity. a detector tuned to beat frequency provides an output indicative of the correlation between the unknown and reference characters.

3,624,606

DATA CORRECTION SYSTEM

Roger Lefevre, Villebon-sur-Yvette, France, assignor to C.I.T.-Compagnie Industrielle des Telecommunications, Paris, France

Filed Dec. 12, 1969, Ser. No. 884,520
Claims priority, application France, Dec. 12, 1968, 178011
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3AG **20 Claims**



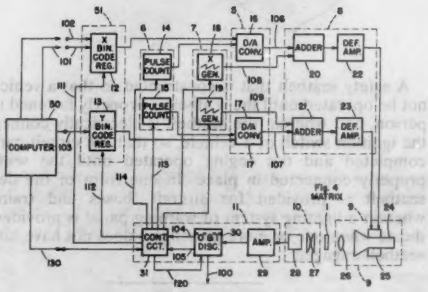
The information contained in the memory passes through an assembly of windows corresponding to various positionings, and a counter associated with each window counts the sequences of identical valences seen through each window. The result is the validation of the direction which enables the validation of the contents of a division receiving an interference signal, seen through a correction window parallel to the validated direction.

3,624,607

APPARATUS FOR THE ELECTRONIC SELECTION AND IDENTIFICATION OF CHARACTERS

Yoshinari Mita; Masamichi Shuto, and Masahiro Moriwaki, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Feb. 26, 1970, Ser. No. 14,526
Claims priority, application Japan, Aug. 25, 1969, 44/67448
Int. Cl. G06k *15/18*
U.S. Cl. 340—146.3AH **9 Claims**



A system for electronically selecting characters, one at a time, from a matrix including a plurality of different characters spaced in columns and rows, a computer providing predetermined binary code signals, indicating particular character rows and columns in which the preselected characters are located, converting the binary code signals into corresponding voltages including successively increasing steps, using the converted voltages to move an electron beam to final positions proximate to the preselected characters, and thereafter moving the electron beam in a coordinate pattern to scan the latter characters, one at a time, to transmit appropriate output "1" and "0" video signals identifying the latter characters.

3,624,608

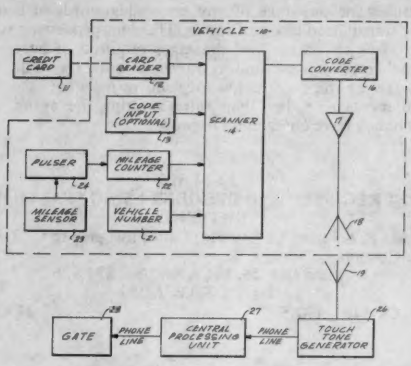
VEHICLE SHARED-USE SYSTEM

Manfred Altman, 15 W. Montgomery Ave. Apt. 3B, Bala Cynwyd, Pa., and Donald Friedman, 4628 Via Coennita, Santa Barbara, Calif.

Filed June 8, 1970, Ser. No. 44,056
Int. Cl. G06k *17/00;* **H04q** *9/00*
U.S. Cl. 340—149 A **8 Claims**

A system is described having a plurality of vehicles, the use of which is available to a number of individuals. An identification and information system is provided for regulating vehicle access, recording the time any individual uses a vehicle, and also the extent of use so that billing and other control functions can be performed at a central processing facility. In this system the access to a vehicle is controlled by a credit card or the like in possession of a user. Vehicle identification and mileage are recorded in the vehicle and upon command are transmitted by a sonic or electromagnetic radiation link to a receiving antenna from which these data

and the user identification are transmitted by phone lines to a central processing station. The potential user's credit is



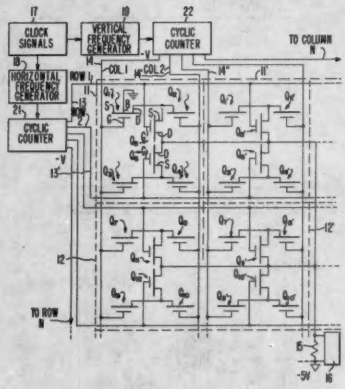
verified and, if approved, the vehicle is permitted to leave the rental site.

3,624,609

TWO-DIMENSIONAL PHOTODIODE MATRIX ARRAY

Gene P. Weckler, Campbell, Calif., assignor to Fairchild Camera and Instrument Coporation, Syosset, Long Island, N.Y.

Filed Jan. 8, 1970, Ser. No. 1,475
Int. Cl. H04q *1/00, 3/00, 9/00*
U.S. Cl. 340—166 **15 Claims**



A two-dimensional photodiode array including insulating-gate field-effect transistor switching elements for the photodiodes is described. The photodiodes operate in the photon flux integration mode and means are provided for sequentially scanning the photodiodes in the array. The array is fabricated by metal oxide semiconductor (MOS) techniques or by the more preferred silicon gate fabrication method.

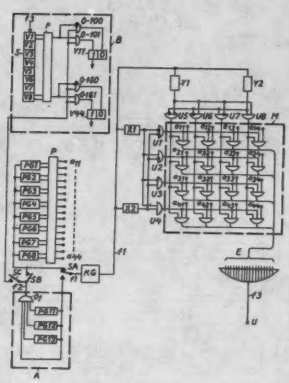
3,624,610

ARRANGEMENT FOR GENERATING A SERIES OF DIGITAL SIGNALS

Stig Erik Warring, Skarholmen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed May 21, 1970, Ser. No. 39,419
Claims priority, application Sweden, June 11, 1969, 8289/69
Int. Cl. H03b *29/00*
U.S. Cl. 340—166 R **2 Claims**

An arrangement for generating a series of digital signals for use as a superimposition series in ciphering and deciphering digital signals. The arrangement comprises a contact matrix in which each contact can have two different conditions, "one" condition and "zero" condition. Said contacts are selected by a pseudorandom generator including a number of pulse generators corresponding to half the number of matrix points. Said generators generate individually a pseudorandom



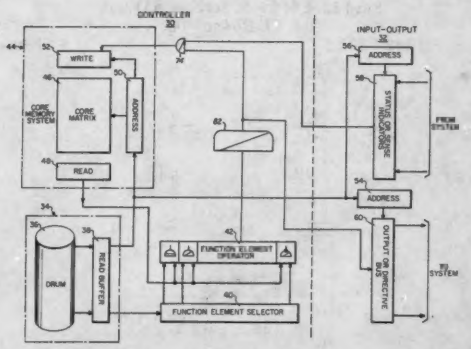
series of binary "ones" and "zeros" and each has two outlets of which the output signal of one outlet is inverted relatively to the output signal of the other outlet. All outlets are connected individually to a contact in the matrix, so that the number of contacts with zero condition always will be equal to the number of contacts with one condition.

3,624,611

STORED-LOGIC REAL TIME MONITORING AND CONTROL SYSTEM

Howard Leroy Wirsing, Wiesbaden, Germany, assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Mar. 9, 1970, Ser. No. 17,655
Int. Cl. G06f *9/16;* **G05b** *19/28*
U.S. Cl. 340—172.5 **9 Claims**

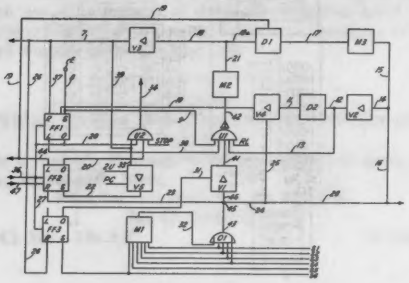


A stored-logic real time monitoring and control system which includes a first storage device for sequentially storing the switching logic descriptions of a desired combinational sequential or the like logic function to be performed and a second storage device for storing the present input status to the switching logic descriptions. Individual hardware versions of the desired switching logic descriptions are provided and selectively allowed to repetitively operate upon the monitored input signals in accordance with the stored switching logic descriptions in such a fashion as to allow the desired real time monitoring and control.

3,624,612
METHOD AND SYSTEM FOR CONTROLLING ELECTRIC PRINTOUT MECHANISMS

Klaus Joerg Hecker, Oberursel Taunes, and Franz Spiroch, Eschborn/Taunes, both of Germany, assignors to Eichner Organisation GmbH, Frankfurt am Main, Germany

Filed Mar. 11, 1968, Ser. No. 712,299
Claims priority, application Germany, Mar. 11, 1967, E 33583
Int. Cl. B41j 9/26
U.S. Cl. 340—172.5 20 Claims

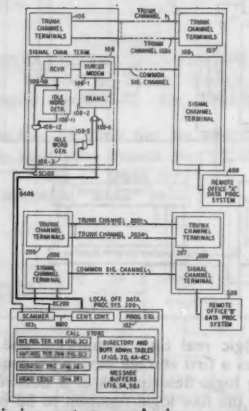


Logic circuits cause one type-bar of the printout mechanism to be operated only upon completion of the operation of a previous type-bar. Logic circuits, consisting of differentiating means and monostable multivibrators cause a repeat signal for activating the same type-bar to be activated if a control signal, signifying movement of the type-bar, is not received within a predetermined time period of a first activation signal. Logic means also prevent activation of a type-bar if a machine function such as a space bar operation or a backspacing is taking place. Also, the interval between activation of type-bars is lengthened when the same type-bar is to be activated successively.

3,624,613
COMMON CHANNEL SIGNALING ARRANGEMENT

William B. Smith, RR #1, Box 894, Silver Glen Road, St. Charles, Ill., and Judson B. Synnott, III, 6095 Chase Ave., Downers Grove, Ill.

Filed June 6, 1969, Ser. No. 831,006
Int. Cl. H04m 7/00
U.S. Cl. 340—172.5 5 Claims

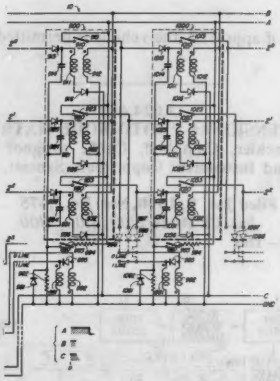


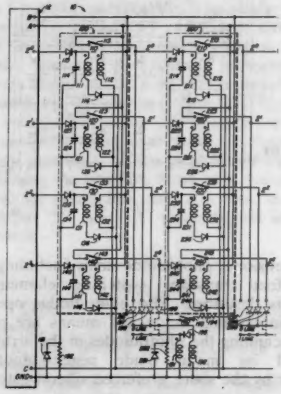
A data transmission system employing a common signaling channel for transmitting messages is disclosed. A data-processing system is provided at each terminal of the channel and messages transmitted from each terminal over the channel are obtained from the respective data-processing system's memory unit. The signaling channel transmits blocks of words continuously in both directions, idle words being inserted in a block when there are no data messages available to be transmitted from the storage unit. An acknowledgement word is part of every transmitted block of words and identifies the positions of any erroneous words in a previously transmitted block of words. The data-processing system recognizes any data word messages required to be retransmitted from storage and retransmits only the data word message, or the incorrect word itself in the case of a single word message, rather than retransmitting the entire block which may have contained idle words.

3,624,614
SHIFT REGISTER AND DECODER USING SEALED REED SWITCHES

Donald P. Schulze, La Mirada, Calif., assignor to C. P. Clare & Company, Chicago, Ill.

Filed Oct. 28, 1969, Ser. No. 871,936
Int. Cl. H03k 13/00
U.S. Cl. 340—172.5 27 Claims





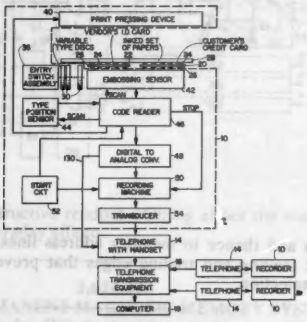
A shift register and decoder controls the operation of a plurality of external devices. Each external device is actuated a predetermined time interval after a code corresponding to the device is presented to the shift register input. The shift register stores the codes and presents them to a plurality of dual winding reed relay decoder circuits, each corresponding to one of the external devices, at approximately the proper times. Each decoder circuit then acts jointly with one of several periodic strobe signals to actuate the corresponding device at precisely the desired time. The decoder circuits erase decoded codes from the shift register, thus reducing the

number of codes which can reach the more remote shift register stages and allowing simpler decoder circuits to be associated with the more remote stages.

3,624,615
TRANSACTION-RECORDING DEVICE

William A. Lippold, Worcester Park, England, and Robert W. Gould, Southboro, Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 19, 1969, Ser. No. 877,905
Int. Cl. G06f *3/04*
U.S. Cl. 340—172.5 **13 Claims**

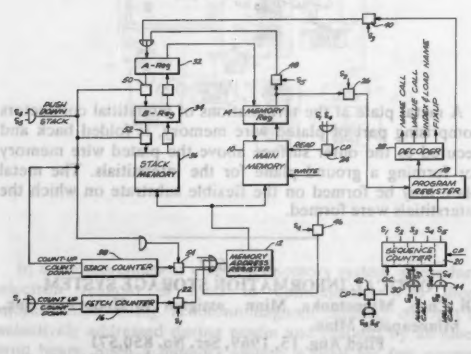


In a transaction recorder, a printer imprints legible information embossed on plastic identification cards and information entered manually with variable types, onto a set of papers. An electrical circuit responds to machine readable embossings on the cards and to the manual entries to furnish audiofrequency signals corresponding to the information printed. A recorder records these signals on magnetic tape. Batches of such recorded signals are played back at convenient intervals, through a telephone handset acoustically coupled to the recorder, to a central processing station.

3,624,616
DYNAMIC ALLOCATION OF MULTIDIMENSIONAL ARRAY MEMORY SPACE

Rajani Manibhai Patel, Arcadia, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 4, 1969, Ser. No. 882,105
Int. Cl. G06f *9/20*
U.S. Cl. 340—172.5 **17 Claims**

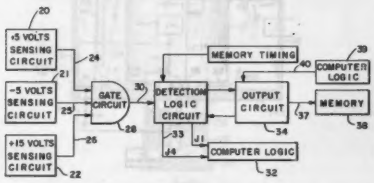


A method and apparatus by which all the dope vectors and data of a multidimensional array can be allocated space in memory when needed during execution of a computer program. Only a single descriptor including the size of the first dimension of the array and a table of sizes of higher dimensions of a data array are made available in memory at the start of the program. When the program calls for a particular data location in the array, only the necessary dope vectors for each dimension of the array are generated and stored in memory to make the particular data location present in memory.

3,624,617
MEMORY PROTECTION CIRCUIT

Harry Putterman, Elizabeth; Peter A. Jager, Haledon; Theodore Urbanik, Jr., Dover, and Joseph A. Lake, Jr., Butler, all of N.J., assignors to The Singer Company, New York, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,746
Int. Cl. G11c *7/02*
U.S. Cl. 340—172.5 **14 Claims**



A memory protection circuit for a computer having a destructive readout memory. In such memories, data stored in the memory cores may be lost if computer operation is attempted when any one of a plurality of power sources for the computer memory section is not operating within its specified tolerance. Means are provided for sensing the output of each of the power sources and producing a signal when all of the sources are at their proper level to permit operation of the computer. In a preferred embodiment, sensing circuits are provided for each of the power sources. The outputs from the sensing circuits provide inputs to a gate circuit. When all of the supply voltages are within specific tolerances, the gate circuit provides a signal which indicates that the memory operation may be initiated. If any one of the power sources fails during operation, the signal from the gate circuit causes a detection logic circuit to provide an output signal which indicates power failure. The power failure signal is provided to the computer logic to inhibit operation of the computer clock source and to cut off an enabling voltage source to the read/write current regulators in the computer until the voltages reassume their proper value and a logic initialization pulse is produced in the manner previously described. However, in order to prevent the loss of data, circuit means are provided which permit a memory cycle which has been initiated to be completed.

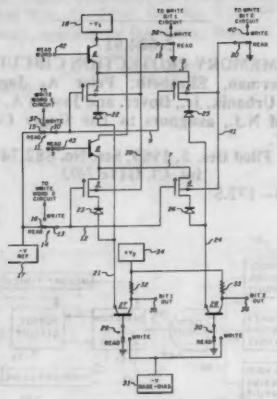
3,624,618
A HIGH-SPEED MEMORY ARRAY USING VARIABLE THRESHOLD TRANSISTORS

Andrew James Lincoln, Concord, Mass., assignor to Sperry Rand Corporation

Filed Dec. 14, 1967, Ser. No. 690,469
Int. Cl. G11c *11/34*
U.S. Cl. 340—173 R **6 Claims**

A computer memory utilizing an array of variable threshold transistor memory cells for storing respective digital bit data. Each transistor is characterized by an electrically controllable conduction threshold which can be set to a binary value upon the application of a pulse voltage of respective polarity and sufficient amplitude across the gate electrode and substrate. The binary states of addressed transistors are sensed by applying a reference voltage having an amplitude intermediate the binary conduction thresholds simultaneously to the gate electrodes of every transistor in

the array and then applying a pulsed voltage to the source and drain electrodes of the addressed transistors. The addressed transistors conduct if in state ONE and do not conduct if in state ZERO.



3,624,619

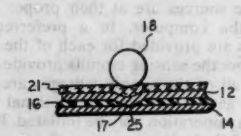
PRESSURE-SENSING TABLET

Biagio F. Ambrosio, Woodland Hills, Calif., assignor to Telautograph Corporation, Los Angeles, Calif.

Filed Jan. 17, 1969, Ser. No. 792,118

Int. Cl. G11c *5/02, 7/00, 17/00*

U.S. Cl. 340—173 R **12 Claims**



A pressure-sensing encoder tablet which detects the movement of a pointed writing instrument is disclosed. The tablet includes a resilient, perforated insulating elastoner sheet disposed between the conductive surfaces of first and second incoder sheets. The perforations are spaced in a uniform pattern and are of a diameter sufficient to permit the writing point under normal writing pressure to deform said first sheet into contact with said second sheet. The perforations are formed by disposing the elastoner sheet in front of a laser and pulsing the laser to form a repeating line pattern of uniformly spaced and sized perforations.

3,624,620

MEMORY ADDRESS SELECTION CIRCUITRY

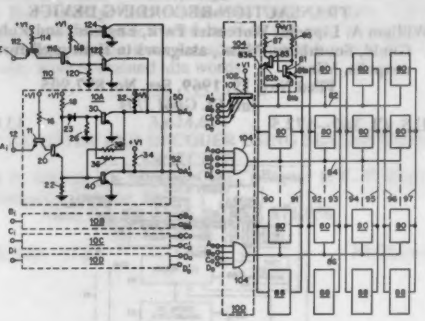
John R. Andrews, Framingham, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed June 23, 1969, Ser. No. 835,495

Int. Cl. G11c *7/00, 5/02*

U.S. Cl. 340—173 R **14 Claims**

In a memory system a selection circuit adapted to operate in a manner to avoid the multiple selection of memory address lines, thereby preventing the attendant destruction of data. The circuitry in the present invention includes first and second binary circuit means, both of which are adapted to respond to an input excitation signal, thereby producing output signals which are the complement of each other. These complementary signals, which are fed to address decoding means and thence to memory address lines, have noncoincident leading and trailing edges that prevent multiple address selection.



3,624,621

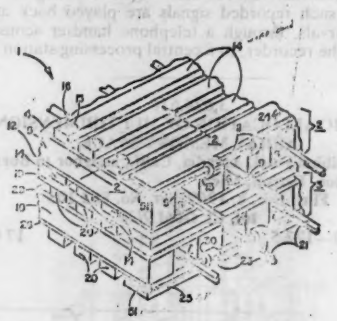
FOLDED BACKGROUND PLANE FOR INTERSTITIAL CONDUCTORS

Gerald J. Moser, Yorba Linda, Calif., assignor to North American Rockwell Corporation

Filed June 12, 1970, Ser. No. 45,739

Int. Cl. G11c *11/04, 11/16*

U.S. Cl. 340—174 PW **3 Claims**



A metal plate at the terminations of interstitial conductors comprising part of plated wire memory, is folded back and secured to the outer surface above the plated wire memory for forming a ground plane for the interstitials. The metal plate may be formed on the flexible substrate on which the interstitials were formed.

3,624,622

OPTICAL INFORMATION STORAGE SYSTEM

Di Chen, Minnetonka, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

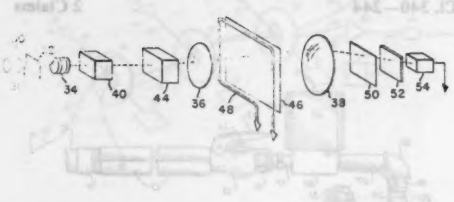
Filed Aug. 15, 1969, Ser. No. 850,571

Int. Cl. G11c *11/14, 11/42;* **G02f** *1/22*

U.S. Cl. 340—174 YC **8 Claims**

An information storage system in which bits of information are stored on quenched high-temperature phase magnetic

film by utilizing a laser to heat the film above it's high-temperature phase Curie point. The laser beam is attenuated to



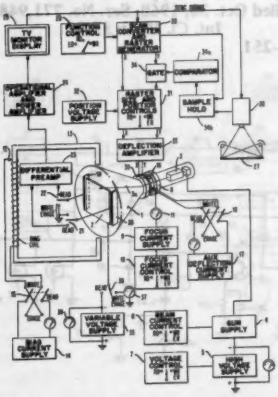
provide nondestructive readout utilizing either the magneto-optic Kerr or Faraday effects.

3,624,623

THERMOREMANENT MAGNETIC MEMORY SYSTEM

Ernest J. Breton, Jr., Wilmington; John C. Harden, Wilmington; Stephen C. Thayer, New Castle, and Eustathios Vassiliou, Wilmington, all of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 5, 1969, Ser. No. 821,899
Int. Cl. G11c *11/42*; H01v *3/04*; G11b *5/00*
U.S. Cl. 340—174 YC 22 Claims



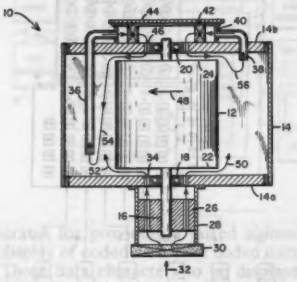
In a thermoremanent magnetic memory system, secondary electron readout is used in combination with thermoremanent writing. A thermomagnetic memory element is selectively addressed during readin and readout by an electron beam. Such a memory system is used for fast access, high capacity storage of analog or digital information. Secondary electron readout techniques are provided for obtaining a good signal-to-noise ratio. In one disclosed system, the thermoremanent memory operates in conjunction with a digital computer.

3,624,624

MAGNETIC DRUM AIR FILTRATION AND PURGING SYSTEM

Wesley R. Johnson, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 24, 1969, Ser. No. 844,477
Int. Cl. G11b *5/76*
U.S. Cl. 340—174.1 E 11 Claims



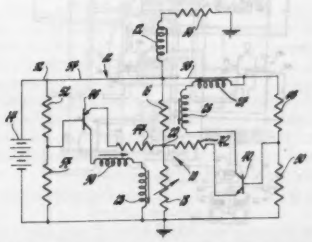
A filtration and purging system for use in a magnetic drum system, and utilizing the pumping effect of the rotating magnetic drum is described. A magnetic drum housing is provided with an input portion for receiving filtered air from the atmosphere, and a plurality of recirculation pickup tubes for circulating the internal housing air through a purging filter and returning the air to the drum housing is shown. The pumping action is performed by the rotating magnetic drum and the pressure inside the drum housing is maintained higher than the external ambient pressure. Additionally, apparatus is described for maintaining a positive pressure in the bearing region for forcing any aerosol through vents to the atmosphere rather than into the interior of the magnetic drum housing.

3,624,625

GAUGE WITH A SOLID STATE DRIVE

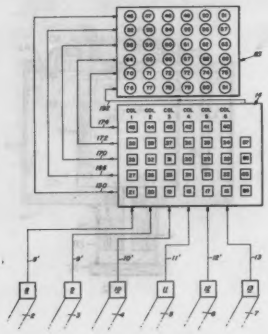
Stephen P. Stonestreet, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 7, 1969, Ser. No. 839,574
Int. Cl. G08c *19/04*
U.S. Cl. 340—177 R 16 Claims



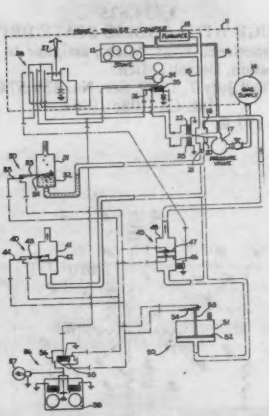
A gauge circuit for producing an angularly displaceable magnetic field that is the vector sum of magnetic fields produced by a first winding that is continuously energized and by second, third, fourth and fifth windings that are variably energized in accordance with a voltage generated by a sender unit, first and second transistors of opposite conductivity types controlling the energization of the variably energized windings.

3,624,626
SEQUENCE RESPONSIVE RELAY MATRIX
William T. MacCreadie, R. D. No. 2 408 21st St., Lewisburg, Pa.
Original application Feb. 20, 1967, Ser. No. 617,111, now Patent No. 3,544,989, Continuation-in-part of application Ser. No. 585,961, Oct. 11, 1966, now abandoned. Divided and this application Sept. 4, 1970, Ser. No. 69,750
Int. Cl. G08b *21/00*
U.S. Cl. 340—223 14 Claims



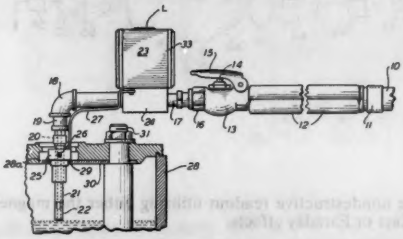
A relay matrix for monitoring electrical signals and for determining and registering the sequential order in which they arrive.
The relays have multicontacts which are wired to lock out all but one register relay per row and column.

3,624,627
GAS LEAK DETECTION SYSTEM
Jack L. Evans, 10241 La Tuna Canyon Road, Sun Valley, Calif.
Filed May 11, 1970, Ser. No. 36,317
Int. Cl. G08b *21/00*
U.S. Cl. 340—242 9 Claims



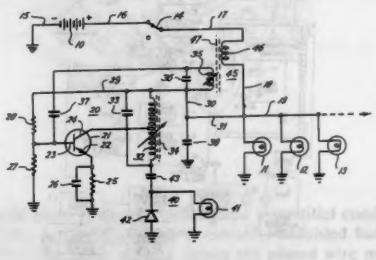
A system for sensing the presence of a leak in a closed gas network interconnecting a gas source with a plurality of gas consuming appliances including thermostatic controls for automatically signalling demand to supply the selected appliances. A manual switchover to leak detection means is provided as well as automatic switchback means to appliance-feed operation that bypasses the leak detection circuit when a demand-controlled appliance call for gas, and that switches over to the leak-detection circuit again when the demand ceases. Means are operably coupled in the network to indicate the detection of a leak in the system which may take the form of an alarm involving audible, visual or other attention-attracting media.

3,624,628
BATTERY-FILLING APPARATUS WITH ELECTRONIC SIGNALING UNIT
Jacob E. Schmidt, Great Notch, N.J., assignor to McGraw-Edison Company, Elgin, Ill.
Filed Nov. 24, 1969, Ser. No. 879,362
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 2 Claims



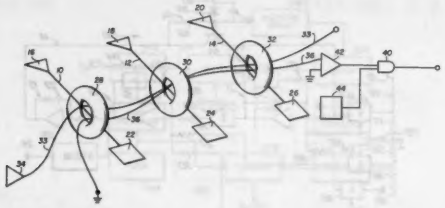
A battery-filling apparatus is provided having a wholly self-contained signaling unit connected to the handle of the filler nozzle. The signaling unit comprises a signal light, and a miniature cell, solid-state oscillator and small speaker for giving an audio signal when the electrolyte in the battery rises into contact with the tip of the filler nozzle.

3,624,629
WARNING SYSTEM FOR WARNING OF DEFECTIVE HEADLIGHTS, TAILLIGHTS AND THE LIKE ON MOTOR VEHICLES, AIRCRAFT, MARINE CRAFT AND THE LIKE
Charles A. Donaldson, Del Rio, Tex., assignor to Wesley Green and J. D. Cavaness, part interest to each
Filed Oct. 30, 1968, Ser. No. 771,948
Int. Cl. H05b *37/03*
U.S. Cl. 340—251 2 Claims



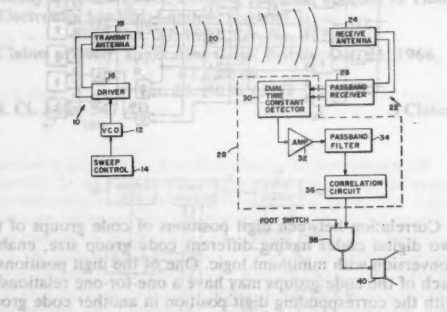
In one embodiment, an oscillator circuit is used to drive a warning light which is located on the dashboard of the vehicle. One winding of a coil device having a saturable core is connected in series in the direct current supply circuit for the vehicle lights, while a second winding is included in an oscillation-determining portion of the oscillator circuit. Proper flow of direct current to the vehicle lights saturates the core and disables the oscillator. Improper operation of one of the vehicle lights takes the core out of saturation and enables the oscillator to energize the warning light circuit. In another embodiment, the oscillator signal is supplied by way of a tuned amplifier circuit to the warning light and the saturable core device is used to detune a tuned circuit in the amplifier when the warning light should not be lit.

3,624,630
CURRENT DETECTION SYSTEM
George F. Schroeder, Wayne, N.J., assignor to Singer-General Precision, Inc., Little Falls, N.J.
Filed Dec. 4, 1969, Ser. No. 882,169
Int. Cl. G08b 21/00
U.S. Cl. 340—253 B 3 Claims



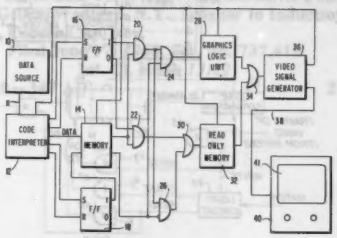
Apparatus for detecting the presence of current in at least one conductor connected in an electrical circuit, wherein a pulsating magnetic field is applied in the vicinity of a permeable member in flux exchange relation with the conductor to effect a change in flux density through the permeable member. A circuit is provided which produces an output signal in response to predetermined changes in the flux density.

3,624,631
PILFERAGE CONTROL SYSTEM
Marc Chomet, East Northport; Donald E. Ellison, Sea Cliff, and Robert F. Watterson, Lake Ronkonkoma, all of N.Y., assignors to Sanders Associates, Inc., Nashua, N.H.
Filed Apr. 27, 1970, Ser. No. 31,902
Int. Cl. G08b 13/00, 21/00
U.S. Cl. 340—280 12 Claims



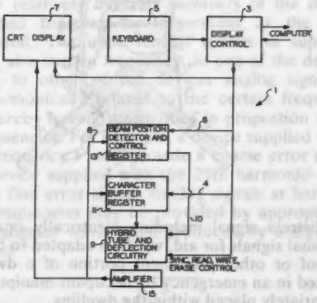
An antipilferage system comprising a cooperating radio frequency transmitter and receiver pair. The transmitter directs swept radio frequency energy to the cooperating receiver circuit wherein balanced oscillating conditions are maintained in a normally steady state. Passive tuned circuits, preferably in the form of printed circuit elements are placed on the merchandise in a store and if an attempt is made to remove unpurchased merchandise from the store without first destroying a fusible link in the passive tuned circuit an unbalance is caused in the receiver oscillator circuits which operates to actuate a suitable alarm. A fully automatic deactivation circuit is also included as part of the invention.

3,624,632
MIXED ALPHAMERIC-GRAPHIC DISPLAY
David Ophir, Melville, N.Y., assignor to Applied Digital Data Systems, Inc.
Filed Sept. 9, 1970, Ser. No. 70,674
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 7 Claims



An apparatus for providing a mixed alphanumerical and graphical display of coded data. The coded data is stored in a memory. Those data characters to be displayed graphically have an additional control bit stored with them. As the data is read from the memory for display, those characters accompanied by such a control bit are directed to a graphics logic unit, while those characters lacking the control bit are directed to a read-only memory. The outputs of these two components control a video signal generator which generates the necessary video signal for application to a display device such as a commercial television receiver.

3,624,633
DISPLAY SYSTEM UTILIZING MULTIFUNCTION STORAGE TUBE
Steven R. Hofstein, Princeton, N.J., assignor to Princeton Electronic Products, Inc., Princeton, N.J.
Filed Nov. 13, 1969, Ser. No. 876,286
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 9 Claims

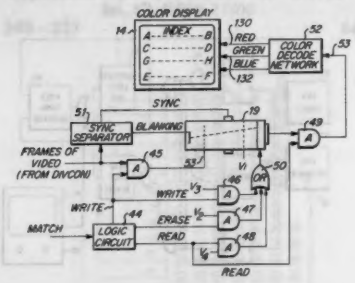


A display system is disclosed, utilizing a hybrid storage tube the target of which includes a matrix area, an information storage area, and beam-readable coordinate indicia thereon. Display control means, which may be in communication with a computer and a keyboard, are present in the system, and serve to control transfer of data from matrix to information storage areas, as well as read out from the storage area. Said control means also activate a CRT display means to display information read out from said storage area.

3,624,634
COLOR DISPLAY

Robert John Clark, Dorion, Quebec, Canada, assignor to RCA Corporation

Filed Dec. 22, 1969, Ser. No. 887,275
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **11 Claims**

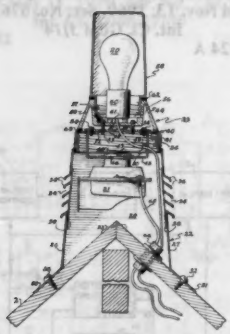


A data source transmits data signals, which represent information to be displayed and the colors in which it is to be displayed, to a display means such as a kinescope. The color-indicating data signals are stored for one line time and the stored signals are employed to cause the display means to display the remaining data signals of the line in the color called for by the stored signal.

3,624,635
DISTRESS SIGNAL

Raymond L. Less, 478 Goundry Ave., North Tonawanda, N.Y.

Filed Aug. 19, 1968, Ser. No. 753,562
Int. Cl. G08b 7/06, 13/02
U.S. Cl. 340—326 **1 Claim**



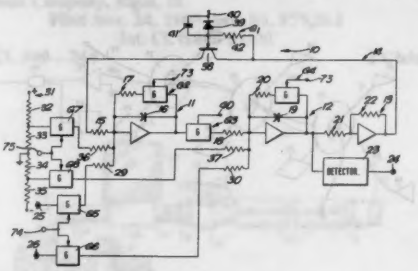
A distress signal including electrically operated audible and visual signals for aid, which is adapted to be mounted on the roof or other prominent portion of a dwelling and be operated in an emergency by occupant-manipulated switches appropriately placed within the dwelling.

3,624,636
DIGITIZERS FOR SINE AND COSINE ANALOGUE SIGNALS

Marie Alphonse Paul Eugene Pierre Diederich, London, England, assignor to Decca Limited, London, England

Filed Mar. 11, 1970, Ser. No. 18,566
Int. Cl. G06g 7/22; H03k 13/20
U.S. Cl. 340—347 AD **16 Claims**

A digitizer for analogue signals representing the sine and cosine of an angle. The digitizer includes two integrating amplifiers and an inverter in a series closed loop. The amplifiers have inputs for receiving the analogue signals. A digital counter is fed with clock pulses while the rotor circuit oscillates from an initial phase determined by the analogue voltages to a datum phase. The number counted by the counter is representative of the said angle. Before such a digitizing operation, reference voltages are set into the rotor circuit which executes a test cycle. According to whether the

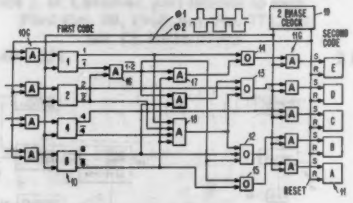


counter is partially full or has overflowed during the test cycle the frequency of the clock pulses is varied in preparation for a digitizing operation. Bistable arrangements controlling switches alternately operative to allow the rotor circuit to oscillate and allow the application of analogue signals to the inputs of the amplifiers are also provided.

3,624,637
DIGITAL CODE TO DIGITAL CODE CONVERSIONS

John W. Irwin, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1970, Ser. No. 32,883
Int. Cl. H04l 3/00
U.S. Cl. 340—347 DD **13 Claims**

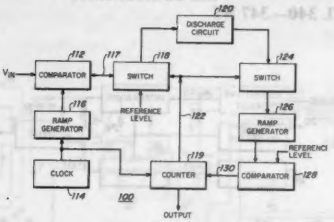


Correlation between digit positions of code groups of the two digital codes having different code group size, enables conversion with minimum logic. One of the digit positions in each of the code groups may have a one-for-one relationship with the corresponding digit position in another code group. The larger code group may have a set of digit positions having unique relationships to a like number of digit positions in the smaller code group. Such relationships effect predetermined permutation characteristics within each of the code groups. The larger code group may be a run-length limited code. The number of digit positions in the set of related digit positions is equal to the limit of the run length. The position of a digit fed directly through a converter without conversion is preferably located adjacent the set of related digit positions. In a specific form of the invention, conversions are made between a four-bit binary code and five-bit run-length-limited code. The conversion from a small code group to a larger code group is effected by adding binary 1's during the conversion process. In converting from a larger or second code group to a smaller or first code group, 1's are subtracted from the code representations.

3,624,638
SIGNAL-CONVERTING METHOD AND APPARATUS

John H. Riseman, Cambridge; Harold S. Goldberg, Lexington, and John Grimes, Framingham, all of Mass., assignors to Orion Research, Inc., Cambridge, Mass.

Filed Sept. 23, 1970, Ser. No. 74,729
Int. Cl. H03k 13/02
U.S. Cl. 340—347 AD 12 Claims

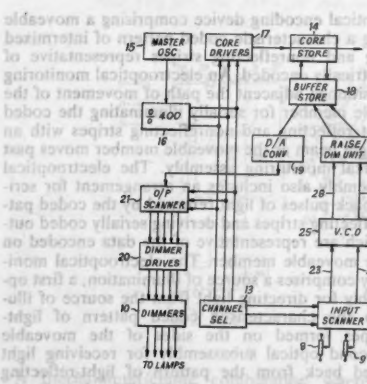


A method and apparatus for converting an input analog signal to an antilog output signal which comprises the generation of a linear ramp signal which increases toward a predetermined response level. A clock signal having a predetermined cycle is provided so that when coincidence is detected between the ramp signal and the input signal, an exponential signal asymptotically approaching a predetermined amplitude with a time constant of predetermined value is then generated until the clock signal reaches the end of its predetermined cycle. At that time, a second linear ramp signal having an instantaneous absolute value of slope determined in accordance with the absolute value of slope of the first ramp signal and an initial absolute value determined in accordance with the absolute amplitude value of the exponential signal at the end of the predetermined cycle is generated. The antilog output signal is proportional to the time period measured from the end of the predetermined cycle until coincidence occurs between the second ramp signal and a reference signal which has a predetermined relationship to the input analog signal.

3,624,639
ANALOGUE-TO-DIGITAL CONVERTER

Anthony Leonard Isaacs, London, England, assignor to Thorn Electronics Limited, London, England

Filed Oct. 23, 1967, Ser. No. 677,217
Claims priority, application Great Britain, Oct. 21, 1966, 47,339/66
Int. Cl. H03k 13/02
U.S. Cl. 340—347 AD 3 Claims

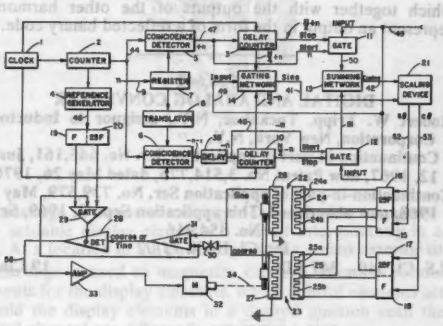


The present invention relates to an analogue-to-digital converter whose output is a cyclic series of pulses, the pulse count of each cycle being proportional to an analogue input signal. The invention is useful, for example, in stage and studio lighting control systems, where the output pulses are used to control the fading of lamps and the occurrence of a burst of pulses may produce a visible step in the brightness of the lamps and it is therefore desirable for the pulses to be distributed over the cycles of the digital output.

3,624,640
MULTIPLE-SPEED POSITION-MEASURING SYSTEM

Robert Z. Geller, Wantagh, N.Y., assignor to Inductsoyn Corporation, Carson City, Nev.

Filed June 17, 1968, Ser. No. 737,416
Int. Cl. H03k 13/02
U.S. Cl. 340—347 AD 2 Claims



A multiple-speed position-measuring system comprising a plurality of position-measuring devices of different significances, the relatively movable members of the devices being connected together for movement at the same mechanical speed. The improvement resides in supplying analog signals, at a certain frequency, to one of the devices, and supplying to other of the devices analog signals at frequencies harmonically related to the certain frequency, the devices thereby having sensitivities in proportion to the respective frequencies. For example, a device supplied with a fundamental frequency F may provide a coarse error signal, and another device supplied with the 25th harmonic (25F) may provide a fine error signal. Analog signals at harmonically related frequencies may be provided by appropriately filtering a rectangular wave signal produced by a digital to analog converter.

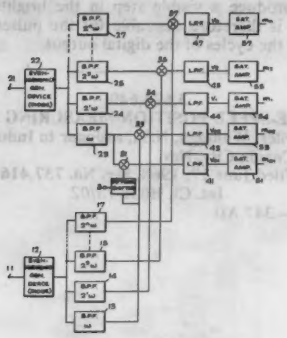
3,624,641
PHASE CONVERTER WITH A REFLECTED BINARY CODE OUTPUT

Lawrence E. Brennan, Los Angeles, and Irving S. Reed, Santa Monica, both of Calif., assignors to Technology Service Corporation, Santa Monica, Calif.

Filed June 5, 1969, Ser. No. 830,792
Int. Cl. H03k 13/02
U.S. Cl. 340—347 AD 9 Claims

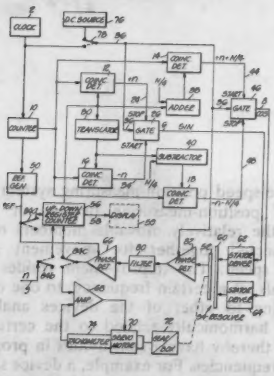
A phase converter is disclosed in which a selected number of higher order even harmonics of each of two signals, whose phase difference is to be converted to digital form, are generated. Corresponding even harmonics are mixed in separated mixers and filtered to provide an output in binary

digital form. The fundamental harmonics of the two signal are combined to provide two outputs in binary digital form



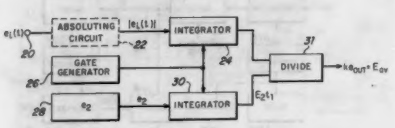
which together with the outputs of the other harmonics represent an output in the form of a reflected binary code.

3,624,642
DIGITAL AND ANALOG CONVERTER
Robert W. Tripp, Tuckahoe, N.Y., assignor to Inductosyn Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 645,161, June 12, 1967, now Patent No. 3,514,775, dated May 26, 1970, Continuation-in-part of application Ser. No. 739,579, May 14, 1968, now abandoned. This application Sept. 3, 1969, Ser. No. 854,816
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **19 Claims**



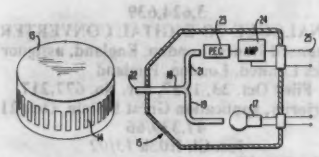
A digital and analog converter incorporating a counter adapted to count repetitively through N counts, a register-counter storing a digital number n, and means cooperating therewith for producing first and second trains of pulses symmetrically spaced about a reference phase of the counter cycle. A first gate, operated by pulses of the two trains, and a second gate, operated by delayed pulses of the two trains, each produce analog signals having pulse widths representative of trigonometric functions of an angle $\theta=2\pi n/N$. The digital and analog converter may be used in a position control system to supply trigonometrically related signals to a position-measuring device having relatively movable, inductively related elements. The measuring device produces an error signal, depending on the relative displacement of the inductively related elements as compared with the angle represented by the trigonometric signals. The error signal causes the register-counter to operate and to change the production of the trigonometrically related signals in a direction reducing the error signal to a small value. The count developed in the register-counter constitutes a digital indication of the relative position of the measuring device elements. Alternatively, the error current may be used in a servosystem to drive the measuring device elements to a command position specified by a digital number n supplied to the system.

3,624,643
SIGNAL-TO-TIME CONVERTER
Peter L. Richman, 22 Barberry Road, Lexington, Mass.
Filed Sept. 17, 1969, Ser. No. 858,682
Int. Cl. H03r *13/02*
U.S. Cl. 340—347 NT **30 Claims**



A system for converting an input AC signal into a output signal having a time period or duration proportional to the full-wave average value of the input signal. The system is formed of a pair of integrators, one of which is connected to accept a reference voltage, the other connected to accept a full-wave rectified version of the input signal. Both integrators operate for the same time, following which the voltage on one is fed to the input of the other so that the latter reversely integrates back to its initial or zero condition. The time required to perform the reverse integration is the desired time period.

3,624,644
ELECTROOPTICAL ENCODING DEVICE
Leonard James Higgins, Schenectady, N.Y., assignor to Datacq Systems Corporation, Latham, N.Y.
Filed Mar. 14, 1969, Ser. No. 815,248
Int. Cl. G06f *3/00*
U.S. Cl. 340—365 **14 Claims**



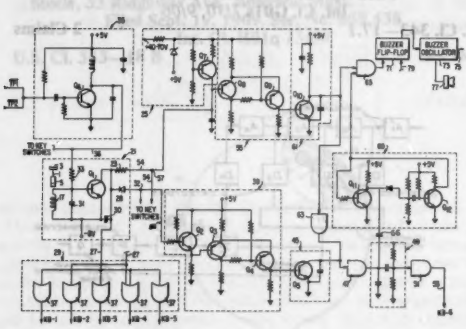
An electrooptical encoding device comprising a moveable member having a characteristic coded pattern of intermixed light reflecting and nonreflecting stripes representative of data to be electrically encoded. An electrooptical monitoring assembly is positioned adjacent the path of movement of the coded moveable member for serially illuminating the coded pattern of light reflecting and nonreflecting stripes with an interrogating light beam as the moveable member moves past the electrooptical monitoring assembly. The electrooptical monitoring assembly also includes an arrangement for serially receiving back pulses of light returned by the coded pattern of light-reflecting stripes and deriving serially coded output signals which are representative of the data encoded on the side of the moveable member. The electrooptical monitoring assembly comprises a source of illumination, a first optical subassembly for directing light from the source of illumination onto the characteristic coded pattern of light-reflecting stripes formed on the sides of the moveable member, a second optical subassembly for receiving light pulses reflected back from the pattern of light-reflecting stripes and for directing the received light pulses to the photosensitive surface of an electro-optic converter such as a photocell for converting the intelligence contained in the received light pulses into coded electrical signals representative of the data encoded on the moveable member.

3,624,645

OSCILLATOR KEYBOARD WITH ROLL AND DOUBLE-STRIKE CONTROL

Julius Gluck, Glenbrook; Warren R. Wines, Norwalk; Joseph J. Laszlo, West Redding; Nanjundiah N. Murthy, West Redding, Conn., and Klaus E. Grund, Ann Arbor, Mich., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 15, 1969, Ser. No. 884,789
Int. Cl. G08b 29/00
U.S. Cl. 340—365 12 Claims



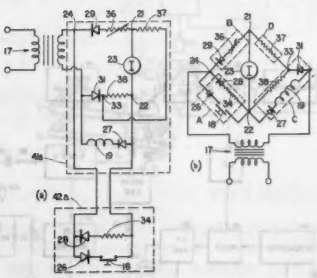
A solid-state keyboard for producing a coded output to an associated data processor. Depression of any single key activates an encoder and a circuit which produces a signal for gating the encoder output into the processor. A further circuit detects when a second key is depressed before a first key is released and, if the time between depression of the keys is less than a fixed interval, an alarm is sounded. If the time between depression of the two keys is greater than the fixed interval, the gating signal for the data represented by the second key is inhibited until after the first key is released.

3,624,646

THERMOMETER AND DOORBELL CHIME IN WHEATSTONE BRIDGE CIRCUIT

Joseph Weiss, 17542 Rainier Drive, Santa Ana, Calif.

Filed Sept. 16, 1970, Ser. No. 72,636
Int. Cl. G08b 5/00
U.S. Cl. 340—371 7 Claims



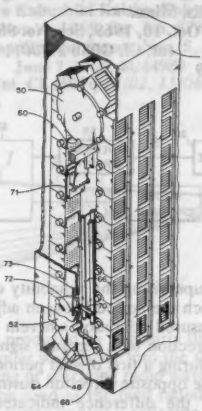
A thermometer/chime combination wherein the usual chime circuitry is modified to indicate the outdoor temperature during the period of time that the chime is not in actual use. Thus, the composite circuitry normally indicates the temperature; but sounds the chime tone when the exterior pushbutton is activated.

3,624,647

TRANSLATABLE DISPLAY SIGN

Charles N. Smith, Cooksville, Ontario, Canada, assignor to Ferranti-Packard Limited, Toronto, Ontario, Canada

Filed Dec. 4, 1969, Ser. No. 882,106
Int. Cl. G08b 5/22
U.S. Cl. 340—373 18 Claims



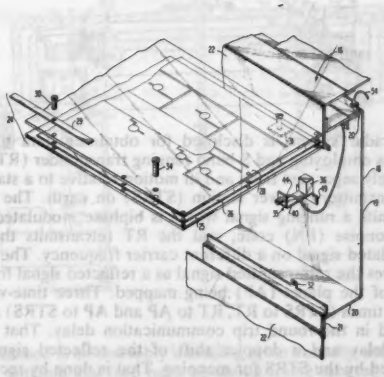
A carriage or series of carriages carrying electromagnetically actuable display elements is moved intermittently in a path. At a location in the path magnetizing means exterior to the carriage is used to magnetize carriage-mounted control elements for the display elements, which control elements act to hold the display elements in a desired position until the control element are differently magnetized.

3,624,648

GRAPHIC DISPLAY ANNUNCIATOR

John G. Willoughby, Leeds, Ala., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Aug. 15, 1969, Ser. No. 850,607
Int. Cl. G09f 9/38
U.S. Cl. 340—381 8 Claims



An annunciator system for displaying and controlling operating conditions of a plant process, including a graphic display which indicates the changing conditions of the plant operation. The graphic display comprises a metal sheet with a high iron content, a translucent display panel positioned in parallel and spaced relationship with respect to the metal sheet, and at least one lamp positioned in the space between the metal sheet and the panel. The lamp includes a magnetized base which engages and is supported from the metal

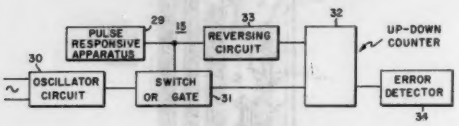
sheet. Circuitry is connected between the lamp and the components of the annunciator system whereby the lamp illuminates a portion of the display panel in response to a condition in the annunciator system.

3,624,649

PERIOD READOUT ERROR CHECKING APPARATUS

Michael A. Ranieri, Bensenville, Ill., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Oct. 10, 1969, Ser. No. 865,419
Int. Cl. G08b *29/00*
U.S. Cl. 340—409 **4 Claims**



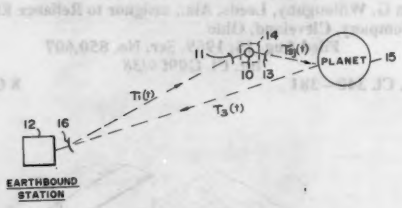
A system for supervising the reliability of a pulsating output device in which the period between adjacent pulses is indicative of a measured condition wherein a counter is energized in a first direction by a separate signal source having a fixed frequency during a first of said periods and the counter is energized in the opposite direction during a second of said periods whereby the difference indicated by the counter between the starting count and the finish count is indicative of the difference between the first and second periods.

3,624,650

METHOD AND APPARATUS FOR MAPPING PLANETS

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Richard L. Horttor, Pasadena, and Richard M. Goldstein, La Canada, Calif.

Filed Sept. 9, 1969, Ser. No. 856,279
Int. Cl. G01s *9/02*; **B64g** *9/00*
U.S. Cl. 343—6.5 R **14 Claims**



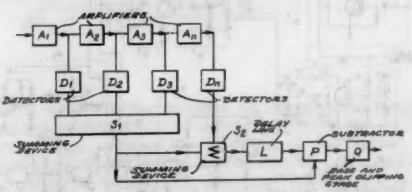
A radar system is disclosed for obtaining data to map planets employing and S-band ranging transponder (RT) that is widely separated from and in motion relative to a stationary transmitter-receiver station (STRS) on earth. The STRS transmits a ranging signal which is biphase modulated by a pseudonoise (PN) code, and the RT retransmits the PN-modulated signal on a different carrier frequency. The STRS receives the retransmitted signal as a reflected signal from an area of the planet (AP) being mapped. Three time-varying delay times (STRS to RT, RT to AP and AP to STRS) are involved in the round trip communication delay. That round trip delay and a doppler shift of the reflected signal are tracked by the STRS for mapping. That is done by recording the received signal in phase quadrature at baseband. The technique for obtaining mapping data then consists of multiplying the recorded signal by a locally generated PN code after synchronizing the PN code modulation of the signal to the local PN code, and separating the synchronized PN-code-modulated signal from the rest of the received signal by a low-pass filter. The separated PN-code-modulated signal corresponds to a narrow strip or contour line at constant range from the RT which is substantially orthogonal to virtually parallel contours of doppler shift caused by motion of the RT relative to the AP. A filter which matches the doppler shift can thus be employed to resolve individual mapping points for display.

3,624,651

RADAR RECEIVERS OF THE SUCCESSIVE DETECTIONS TYPE

Andre Charles Robert, Eaubonne, and Maurice Pierre Rodolphe Gerlach, Saint-Maur, both of France, assignors to Sud-Aviation Societe Nationale de Constructions Aeronautiques, Paris, Seine, France

Filed Apr. 8, 1969, Ser. No. 814,326
Int. Cl. G01s *7/30, 9/06*
U.S. Cl. 343—17.1 **2 Claims**



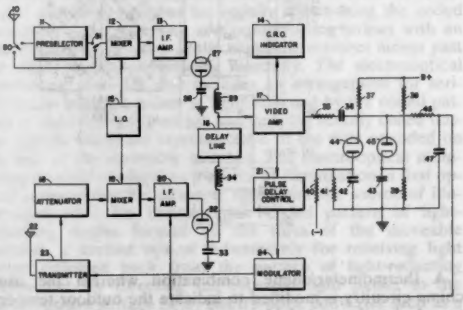
The present invention relates to a method of shaping radar signals upon reception, characterized by the fact that it includes the step of subjecting each signal received to successive amplifications and to detections respectively associated thereto, the step of making a first summing of the signals detected up to the penultimate detection, the step of making a second summing of the signals resulting from the first summing and of the signals resulting from the ultimate detection, the step of subjecting the signals resulting from said second summing to a constant time delay, the step of effecting s subtraction operation between the time-delayed signals and the signals resulting from the first summ g, and the step of subjecting the signals resulting from said subtraction to a base-clipping and peak-clipping operation whereby to generate usable signals the leading edges of which are produced at instants independent of the amplitude of the signals received and hence, most notably, of the range of the target.

3,624,652

PULSE GENERATION SYSTEM

Andrew V. Haeff, Washington, D.C., assignor to The United States Government as represented by the Secretary of the Navy

Filed Jan. 16, 1946, Ser. No. 641,549
Int. Cl. H04k *3/00*
U.S. Cl. 343—18 E **10 Claims**



1. A method of impairing the effectiveness of radio echo location operations in which radio frequency impulses are transmitted to an obstacle and the reflections thereof

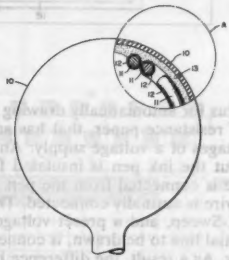
received at the echo location station, which comprises the steps of initiating the transmission of an interfering signal before the receipt of each said radio frequency impulse, maintaining transmission of the interfering signal during receipt of that impulse, and terminating the transmission of the interfering signal after receipt of that impulse but before the receipt of a succeeding radio frequency impulse.

3,624,653

RADAR-REFLECTIVE BALLOONS

Andrew J. Kelly, 32 Vogel St., West Roxbury, Mass.; John J. Lynch, 45 Oakland Ave., Arlington, Mass., and Robert G. Steele, 33 Ridgeway Ave., Billerica, Mass.

Filed Sept. 19, 1969, Ser. No. 859,438
Int. Cl. H01q *15/00*
U.S. Cl. 343—18 B 6 Claims



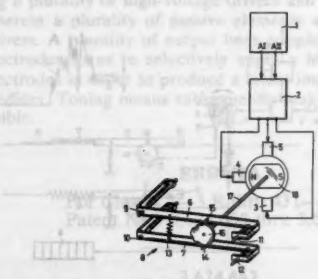
Metallized polymeric dipoles are affixed to the surface of balloons which are tracked by radar.

3,624,654

APPARATUS FOR MAKING ZIGZAG RECORDINGS OF DIFFERENT WIDTH

Karl Vogtlin, Villingen, and Norbert Helmschrott, Schwenningen, both of Germany, assignors to Kienzle Apparate GmbH, Villingen, Germany

Filed Mar. 27, 1970, Ser. No. 23,336
Claims priority, application Germany, Mar. 28, 1969, P 19 15 917.2
Int. Cl. G07c *5/06*; G01d *9/28*
U.S. Cl. 346—49 14 Claims



Angularly spaced windings of a rotary armature are selectively energized by an astable multivibrator under the control of two selector switches correlated with two recording means so that the armature oscillates between different end positions and effects by a cam corresponding oscillations of the two recording means which record beam-shaped zigzag recordings of different width representing conditions selected by setting the selector switches to different selector positions.

ERRATUM

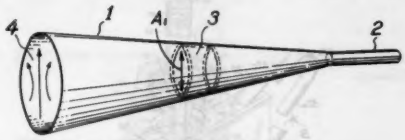
For Class 343—715 see:
Patent No. 3,624,662

3,624,655

HORN ANTENNA

Toshio Sato, Sagamihara-shi, and Matsuichi Yamada, Yokohama-shi, both of Japan, assignors to Kobusai Denkshin, Denwa Kabushiki Kaisha, Tokyo-To, Japan

Filed Nov. 4, 1969, Ser. No. 873,988
Claims priority, application Japan, Nov. 5, 1968, 43/80417
June 7, 1969, 44/44980
Int. Cl. H01q *13/02, 15/08*
U.S. Cl. 343—756 5 Claims



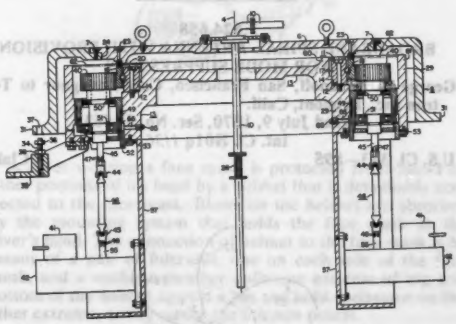
A horn antenna produced by angularly flaring the end of a circular of rectangular waveguide into the shape of a horn to be used for radiating or receiving radio waves directly into or from space or to be used as the feed radiator of an antenna for illuminating a mirror and/or a reflector, in which a band of dielectric material is arranged circumferentially on a part of the inner surface of the horn so as to be symmetrical with the axis of the horn to obtain a field pattern having low side lobes and substantially the beam width with respect to at least two perpendicular planes of polarization. The circumferential band of dielectric material may be replaced by two pairs of opposed plates of dielectric material, which pairs are spaced longitudinally of the horn.

3,624,656

RADAR ANTENNA SUPPORT AND DRIVE ASSEMBLY

Michael Kaschak, Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 30, 1970, Ser. No. 51,098
Int. Cl. H01q *3/00*
U.S. Cl. 343—762 3 Claims



Disclosed is an assembly including a horizontally extending radar antenna and feed horn mounting frame secured to side edges of a rotary upper pedestal part supported and driven by a combined bull gear and ball bearing mounted on a fixed pedestal part and removable via the top of the assembly without disturbing such mounting frame or the antenna and feed horn mounted thereon. Two drive assemblies each including bearings, shafts, and pinion gears engaging the bull gear at diametrically opposite locations and normally driven simultaneously by separate motor means via respective clutch means, are so mounted on the fixed pedestal part as to

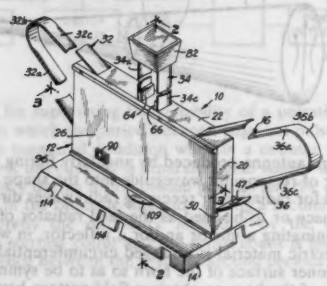
permit removal and replacement of either one while rotation of the assembly is maintained by the other. Normally retracted stud bolts are effectuable for providing rotary locking temporary support of the upper pedestal part by the lower pedestal part during a removal and replacement of the combined bull gear and ball bearing.

3,624,657

ADJUSTABLE FOLDED DIPOLE WITH ROTATABLE HOUSING

Robert D. Kahn, Rockville Center, N.Y., assignor to Fedtro, Inc., Rockville Center, N.Y.

Filed May 15, 1970, Ser. No. 37,599
Int. Cl. H01q 9/26
U.S. Cl. 343—803 **2 Claims**



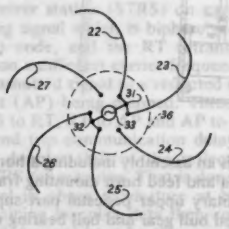
A television antenna which includes a housing and an elongated flexible signal-receiving loop. The loop is formed into a three-lobed configuration, each of these lobes projecting outwardly from the housing. A series of guides and rollers fixed in the housing permit the central projecting lobe of the loop to be retracted into or extended from the housing to any desired degree, with a corresponding extension or retraction, respectively, of the other two lobes on either side of the central lobe. Further, the housing is mounted for rotation on a base, which is adapted to be stationed on any flat surface.

3,624,658

BROADBAND SPIRAL ANTENNA WITH PROVISION FOR MODE SUPPRESSION

George N. Voronoff, San Francisco, Calif., assignor to Textron Inc., Belmont, Calif.

Filed July 9, 1970, Ser. No. 53,563
Int. Cl. H01q 1/36
U.S. Cl. 343—895 **8 Claims**



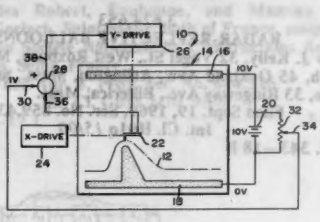
A six-arm spiral antenna backed by a reflective surface is energized to activate four arms with the other two arms being parasitic and Mode 5 radiation is suppressed to achieve broadband operation.

3,624,659

AUTOMATED EQUIPOTENTIAL PLOTTER

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Earle R. Bunker, Jr., Los Angeles, Calif.

Filed Dec. 9, 1969, Ser. No. 883,524
Int. Cl. G01d 9/40; G01r 13/08
U.S. Cl. 346—1 **6 Claims**



Apparatus for automatically drawing equipotential lines on a sheet of resistance paper, that has areas connected to different voltages of a voltage supply. An ordinary X-Y-plotter is used, but the ink pen is insulated from its surroundings, and a wire is connected from the pen to the terminal where the slide wire is normally connected. The plotter is set for automatic X-Sweep, and a preset voltage equal to that of the equipotential line to be drawn, is connected to the Y-input of the plotter. As a result, the difference between the voltage at the pen and the preset voltage drives the pen up or down, so that it always contacts points on the resistance paper which are of the voltage of the equipotential line to be drawn.

ERRATUM

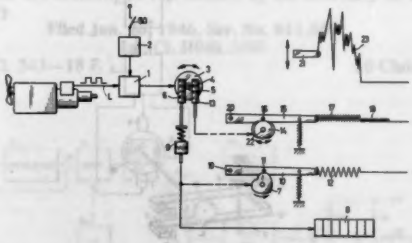
For Class 346—49 see:
Patent No. 3,624,654

3,624,660

DRIVE FOR APPARATUS RECORDING OPERATIONAL CONDITIONS OF A CAR

Manfred Fichter, Weiler, Germany, assignor to Kienzle Apparate GmbH, Villingen, Germany

Filed July 2, 1970, Ser. No. 51,766
Claims priority, application Germany, July 9, 1969, P 19 34 731.0
Int. Cl. G07c 5/12; G01d 9/30
U.S. Cl. 346—49 **15 Claims**



The distance travelled by a car, and the time periods during which one, or two operators, actually drive the car or are performing auxiliary services like waiting or loading, are simultaneously recorded by at least two oscillatory recording means driven by rotary operating means rotated by one synchronous motor receiving pulses from two pulse generators, one of which is activated when the car travels a distance, and the other of which is activated by a manual switch. The polarity of every alternate pulse is reversed by an electronic control circuit so that the synchronous motor is driven by alternating current. Switch means cause a rotation

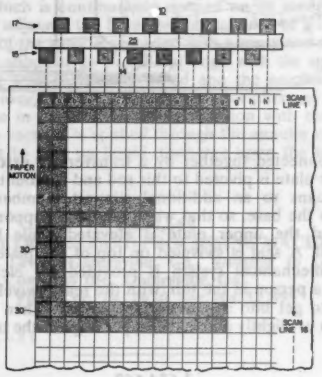
of the synchronous motor in opposite directions during movement and standstill of the car. The operating means associated with the travelled distance, is driven only when the motor rotates in one direction, while the operating means associated with the working time periods, causes different oscillations of the respective recording means when the motor rotates in opposite directions.

3,624,661

ELECTROGRAPHIC PRINTING SYSTEM WITH PLURAL STAGGERED ELECTRODE ROWS

Michael S. Shebanow, and Ronald F. Borelli, both of Medfield, Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 14, 1969, Ser. No. 824,419
Int. Cl. G03g *15/00*
U.S. Cl. 346—74 ES **17 Claims**



In an electrographic printing system, a multiple row electrode structure wherein successive rows are mutually spaced from each other, each row including mutually spaced electrodes, the electrodes of successive rows being positioned in a staggered manner with respect to each other. The system further comprises improved electrode drive circuitry, including a plurality of high-voltage drivers and a selection matrix wherein a plurality of passive elements are coupled to the drivers. A plurality of output lines couple the matrix to the electrodes so as to selectively apply a high voltage to the electrodes in order to produce a latent image on a dielectric medium. Toning means subsequently make the latent image visible.

ERRATA

For Classes 2—3 R thru 431—93 see:
Patent Nos. 3,624,663 thru 3,624,824

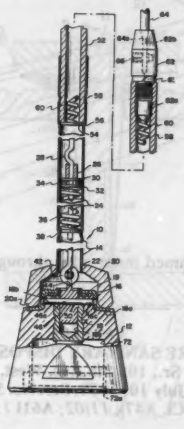
3,624,662

MOBILE DEFLECTABLE ANTENNA WITH IMPEDANCE MATCHING

Alvin Feder, Skokie, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 5, 1970, Ser. No. 637
Int. Cl. H01q *1/32*
U.S. Cl. 343—715 **9 Claims**

A tiltable monopole antenna of the type to be mounted on an automobile rooftop or the like as a transmitting-receiving antenna for mobile radio communication equipment. A novel antenna-to-mounting base structural connection greatly simplifies the antenna and mounting base assembly as these parts provide a rigid pivotal connection and are held together by a transversely extending pin. Impedance matching means is provided within the mounting base of the antenna to match



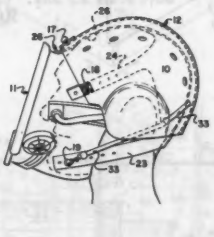
the antenna with the given transmission line connected thereto over a given frequency range.

3,624,663

DIVER'S FACEPLATE AND HELMET HEAD GEAR

Richard F. Jones, Santa Barbara, Calif., assignor to General Aquadyne, Inc., Santa Barbara, Calif.

Filed June 15, 1970, Ser. No. 46,004
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **8 Claims**



A diver wearing a face mask is protected from blows on other portions of his head by a helmet that is detachably connected to the face mask. Blows on the helmet are absorbed by the mounting system that holds the face mask to the diver's head. The connection of helmet to the face mask is by means of a pair of fulcrums, one on each side of the face mask, and a resilient member pulls one extreme of top and bottom of the helmut against a pin and hold connector on the other extreme, acting across the fulcrum points.

3,624,664

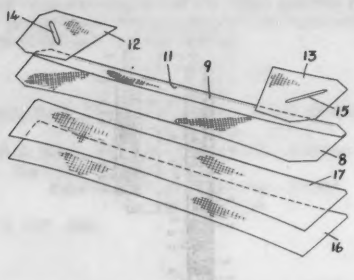
SHIRT COLLAR AND METHOD OF MAKING SAME

Reg Dowsett, Kitchener, Ontario, Canada, assignor to John Forsyth Co. Limited, Kitchener, Ontario, Canada

Filed Aug. 11, 1970, Ser. No. 62,950
Int. Cl. A41b *3/00, 3/06*
U.S. Cl. 2—131 **9 Claims**

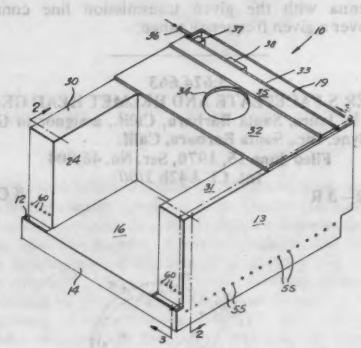
A shirt collar of the turned-down type having an attachment edge and a seamed outer edge, comprises inner and outer plies and an interlining confined between the plies. A strip of one-sided fusing fabric is stitched and fused to the inner side of the interlining, the strip extending along a lon-

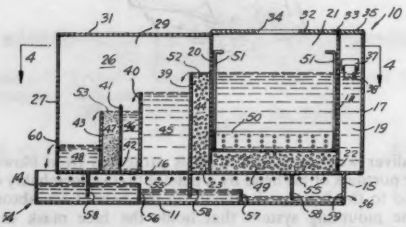
gitudinal edge of the interlining adjacent to the seamed outer edge of the collar. The strip serves to prevent puckering of



the collar at its seamed outer edge through stretching of the interlining.

3,624,665
MINIATURE SANITARY DISPOSAL PLANT
Francis L. Klingle, Sr., 105 5th Ave. West, Cresco, Iowa
Filed July 10, 1970, Ser. No. 53,892
Int. Cl. A47k *11/02*; **A61l** *11/00*
U.S. Cl. 4—115 **7 Claims**

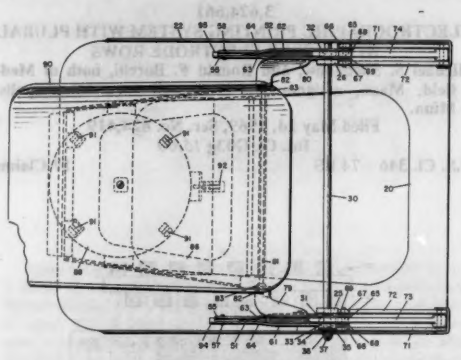




A miniature sanitary disposal plant which includes a toilet combined with an enzyme digester tank, an activated carbon-leaching bed, a separating tank, a chemical-neutralizing tank, a plurality of evaporating tanks, and a discharge of purified nonpolluting fluid. A sludge trap is provided for removing sludge collecting in the system.

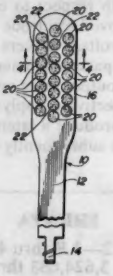
3,624,666
DEVICE FOR ASSISTING HANDICAPPED PERSONS TO GET INTO AND OUT OF A BATHTUB
Warren P. Higgins, Sr., 1125 Grace St., San Leandro, Calif.
Filed Aug. 5, 1970, Ser. No. 61,289
Int. Cl. A47k *3/12*
U.S. Cl. 4—185 L **6 Claims**

A self-assistance device for enabling handicapped persons to get into and out of a bathtub. A rack-and-pinion system is operated in opposite directions by a pair of ratchets, each having a pawl, and a clutching device for selecting which ratchet and pawl means is to be engaged for moving its pinion and the rack in one direction during one mechanical stroke of a control lever, the other stroke being a return stroke. An arm pivotally attached to each of the two racks has one or more rollers engaging and moving up or down an inclined plane track means. Each arm has another roller for engaging a front support member, there being two such,



rigidly connected together by a transversely extending rod. An upper plate is pivoted to this rod and is mounted through hinge means to an additional support member which is hinged to the base, so that when the front support members are raised the upper plate is elevated while being kept horizontal. A seat is swiveled on top of the plate. Thus, an entirely mechanical system is provided for elevating and lowering a person in the tub, with the seats swiveling to enable one to get into and out from the seat when the seat is level with or slightly above the upper edge of the tub.

3,624,667
TOOTHBRUSH
Joseph C. Muhler, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.
Filed Apr. 1, 1970, Ser. No. 24,522
Int. Cl. A46b *15/00*
U.S. Cl. 15—167 R **3 Claims**



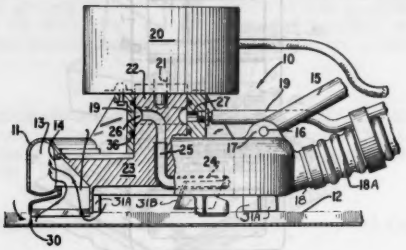
An improved toothbrush head, especially adapted for use in association with an automatic toothbrush power handle including as an energy source a source of vibratory energy in the sonic range, comprises a plurality of first bristle tufts and a plurality of second bristle tufts, the individual bristles in the first and second tufts of bristles being of different diameter. About four times as many bristles are provided in the tufts of smaller diameter bristles. The large diameter bristles are designed to clean the oral hard tissues, whereas the softer smaller diameter bristles are designed to polish the oral hard tissues and stimulate the gingival tissues. The bristle tufts are arranged on a brush head in three rows, with all peripheral bristle tufts being formed of relatively smaller diameter bristles and with the centrally disposed tufts being formed of relatively larger diameter bristles.

3,624,668

RUG CLEANING AND RINSING DEVICE

Helmuth W. Krause, 5 Evergreen Parkway, Westport, Conn.

Filed July 23, 1970, Ser. No. 57,543
Int. Cl. A47l *11/30*
U.S. Cl. 15—322 7 Claims



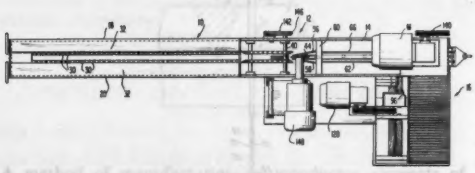
A surface cleaning device has a housing with an annular channel which is continuously opened on its inner face and positioned adjacent the outer peripheral edge of a rotor. The underside of the rotor is provided with a spray and a plurality of nozzles adjacent its peripheral edge with the spray communicating with a cleaning liquid and the nozzles communicating through passages to the outer periphery of the rotor, so as to be in continuous communication with the annular channel. A vacuum is applied through the annular channel to the nozzles to pick up liquid discharge upon the surface by the spray.

3,624,669

POULTRY GIZZARD PROCESSING MACHINE

Eugene J. Lewis, Gainesville, Ga., assignor to Gainesville Machine Company Inc., Gainesville, Ga.

Filed Apr. 29, 1970, Ser. No. 32,895
Int. Cl. A22c *21/06*
U.S. Cl. 17—11 7 Claims



A machine for splitting, cleaning and removing the liner sac from the gizzards of fowl. After splitting, the gizzards are spread open and cleaned and they are then caused to be deposited upside-down onto an inclined flume where they are flushed onto a pair of helically ribbed rotating peeling rolls for removing the sac. A pivoted V-shaped tamping plate overhangs the peeling rolls and is driven with a vertical tamping motion to assure that the sac is engaged and removed by the rolls while the gizzards are fed along the rolls due to the action of the helical ribs. The plate also prevents the gizzards from turning over. Near the end of the peeling rolls a deflector plate turns the gizzards over again and pushes them to one side onto an inspection table formed by a series of spaced rods. A second pair of peeling rolls is exposed so that the inspector may remove any incompletely removed sac by manually applying a gizzard against the exposed rolls.

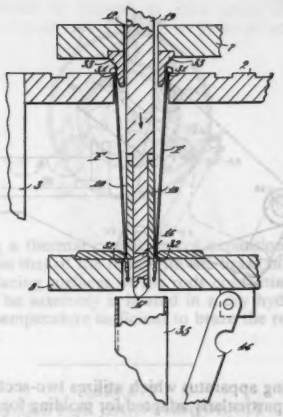
3,624,670

APPARATUS FOR STRETCHING PLASTIC FILAMENTS

George F. Gordon, Nashua, N.H., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Feb. 27, 1969, Ser. No. 803,041
Int. Cl. B29c *17/02*
U.S. Cl. 18—1 FT 7 Claims

For stretching plastic filaments attached to a runner, each filament having an inner heat at its inner end adjacent the runner and an outer head at its outer end, apparatus comprising first and second pairs of abutments for engagement with said heads respectively, means for moving said pairs apart to stretch the filaments, means for severing and ejecting the runner after the heads have been engaged by the abutments, a hopper for catching the stretched filaments, and means for removing the hopper while the runner is being ejected.

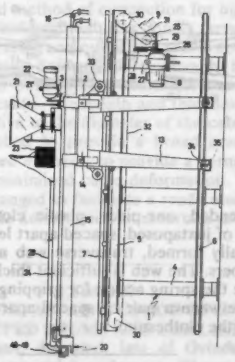


3,624,671

REINFORCED PLASTIC TUBING

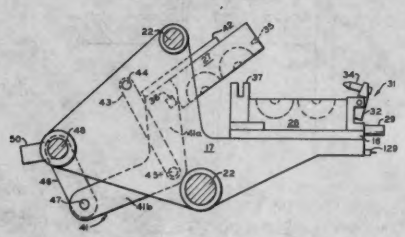
Carlos Fradera Pellicer, and Fradera Pellicer, both of Plaza Conde de Rodezno 11, Pamplona, Spain

Filed Aug. 20, 1969, Ser. No. 851,657
Int. Cl. B29c *5/00*
U.S. Cl. 18—26 RR 6 Claims



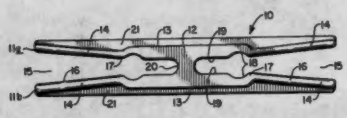
Apparatus for the manufacture of tubes of plastic material whereby a succession of measured quantities of material are disposed by projection within a rotary tubular mould to form concentric layers, the first layer being of synthetic resins, at least one following layer being of a mixture of resins and glass or similar fiber chopped by a chopping means and fed as a reinforcement means and a last layer being of resin, the various layers being bound together by embedding the said fiber, which is arranged in orderly orientation.

3,624,672
MOLDING OF CELLULAR OBJECTS
Paul L. Spivy, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed June 13, 1968, Ser. No. 736,732
Int. Cl. B29f 1/00
U.S. Cl. 18—30 LM 9 Claims



A molding apparatus which utilizes two-section split molds which are particularly adapted for molding foamable material and are provided with opening devices which automatically remove the top mold section from each mold, then swing it down to the position adjacent the bottom section of each mold. In operation, the mold is closed around elongated extrusion nozzles which are withdrawn as the mold is filled with the expandable thermoplastic material.

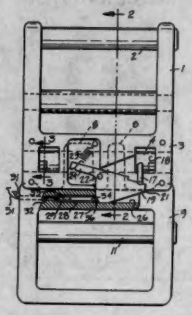
3,624,673
DOUBLE-ENDED PLASTIC CLOTHESPIN
Paul A. Merchant, Kansas City, and John C. Armbruster, Independence, both of Mo., assignors to Ethyl Development Corporation, Kansas City, Mo.
Filed Nov. 19, 1969, Ser. No. 878,110
Int. Cl. D06f 55/00
U.S. Cl. 24—137 R 1 Claim



A double-ended, one-piece, plastic clothespin which includes a pair of juxtaposed, spaced-apart leg members joined by an integrally formed, transverse web at the midpoint of the leg members. The web is sufficient thickness and resiliency to provide the spring action for gripping of an article on a clothesline between a pair of spaced-apart legs provided at either end of the clothespin.

3,624,674
RELEASING DEVICE FOR STRAP CONNECTORS
John A. Gaylord, San Rafael, Calif., assignor to H. Koch & Sons, Inc., a division of Global Systems, a Gulf & Western Company, Corte Madera, Calif.
Filed Dec. 15, 1969, Ser. No. 885,057
Int. Cl. A44b 19/00
U.S. Cl. 24—230 AV 11 Claims

The use of a cartridge which is fired, and the expansion of the gas in the cartridge operates a device for releasing the web. The movement caused by the expansion releases an obstruction from the part of the ring or the bar on which the web is hung. In one form it will turn a cutaway shaft which obstructs the removal of prongs. In another form it will



remove an obstruction which prevents the swinging open of the hook which holds the ring in place.

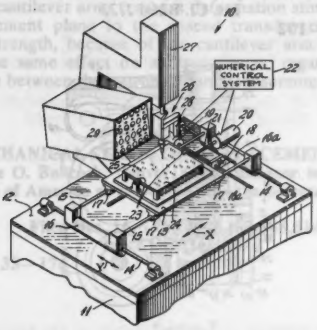
3,624,675
FELTING NEEDLE
Edson P. Foster, 409 S. 29th St., P.O. Box 527, Manitowoc, Wis.
Filed Aug. 11, 1970, Ser. No. 62,876
Int. Cl. D04h 18/00
U.S. Cl. 28—4 N 9 Claims

A felting needle constructed in the form of an elongated body having a shank portion and a barbed portion. The barbed portion has a plurality of barbs and terminates in a pointed end. A V-shaped or U-shaped circumferential indentation is provided somewhere along the length of the shank portion to define the weakest structural location along the length of the elongated body, which is called the fracture point.

3,624,676
NUMERICALLY CONTROLLED WIRE TERMINATING APPARATUS
Charles A. Whitney, Canton, and Walter J. Hutengs, Plainville, both of Conn., assignors to The Superior Electric Company, Bristol, Conn.
Filed June 20, 1969, Ser. No. 835,043
Int. Cl. H01r 43/00
U.S. Cl. 29—203 B 3 Claims

An apparatus for automatically positioning work held on a support with respect to a tool according to programmed commands effectuated by a numerical control system. The tool performs an operation on the work which requires an operator to manually select a specific size workpiece for each

operation from a plurality of different sizes. The apparatus includes an operator sensible indicator for each specific size workpiece and the system through programmed commands



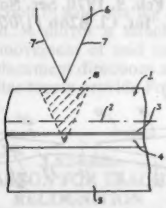
causes the indicator for the immediately required size of workpiece to be energized to inform the operator which workpiece must be selected.

3,624,677

MANUFACTURE OF SEMICONDUCTOR ELEMENTS

Allan Pearson, Tewin, England, assignor to Westinghouse Brake and Signal Company Limited, London, England

Filed June 10, 1968, Ser. No. 735,625
Claims priority, application Great Britain, June 27, 1967, 29,560/67
Int. Cl. B01j *17/00*; H01l *7/66*
U.S. Cl. 29—583 **2 Claims**



A method of manufacturing semiconductor elements of truncated pyramidal form, which method includes the steps of forming in a wafer of semiconductor material having opposed major faces a PN junction extending parallel to and lying between the major faces of the wafer, and subsequently cutting the wafer into a plurality of discrete semiconductor elements by a plurality of crisscross cuts the sidewalls of each of which are inclined at an angle of other than 90° to the PN junction.

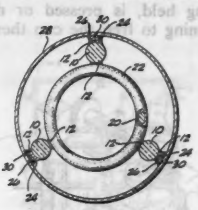
3,624,678

METHOD FOR MAKING DIELECTRIC-TO-METAL JOINTS FOR SLOW-WAVE STRUCTURE ASSEMBLIES

Louis R. Falce, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Original application Sept. 15, 1966, Ser. No. 579,648, now abandoned. Divided and this application Apr. 15, 1969, Ser. No. 830,173
Int. Cl. H01p *11/00*
U.S. Cl. 29—600 **8 Claims**

In the disclosed method for fabricating a slow-wave structure supporting and encasing assembly, a film of elemental chromium is vapor deposited onto a portion of each of a plurality of beryllia rods. The rods are assembled about the peripheral surface of a molybdenum slow-wave structure, at least a portion of which has been provided with a coating of copper braze material. The assembly is heated in a dry hydrogen atmosphere to a temperature sufficient to braze the rods to the slow-wave structure. Chromium is selectively removed from regions of the inwardly facing surface of the rods not contacting the slow-wave structure, and a coating of copper-silver braze material is deposited over portions of the outwardly facing surfaces of the rods. The slow-wave structure and the rods are inserted into an encasing barrel of a



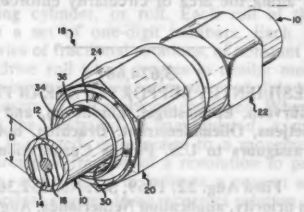
material having a thermal coefficient of expansion substantially the same as that of the rods, with the braze material on the outwardly facing surfaces of the rods contacting the encasing barrel. The assembly is heated in a dry hydrogen atmosphere to a temperature sufficient to braze the rods to the encasing barrel.

3,624,679

COAXIAL STAKE FOR HIGH-FREQUENCY CABLE TERMINATION

George William Ziegler, Jr., R.D. #1, Carlisle, Pa.

Filed Jan. 23, 1970, Ser. No. 8,761
Int. Cl. H01r *43/00*; H05k
U.S. Cl. 29—628 **4 Claims**



A connector and method of connection for high-frequency coaxial cable is disclosed featuring a soft ferrule driven by dies to expand inwardly and outwardly as it is compressed axially through inelastic deformation to develop hoop stresses in a center tubular portion of a connector and in the outer conductor of the cable. The length and thickness dimensions of the ferrule relative to the diameter of the cable outer conductor are controlled to provide a broad area of contact between the stressed elements to provide a permanent-sealed termination with minimized cable deformation. The connector structure is arranged to facilitate a ready measurement of the extent of ferrule deformation to ascertain proper installation.

3,624,680

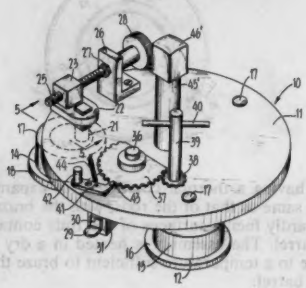
METHOD OF AND APPARATUS FOR OPENING CAP-EQUIPPED DRUMS AND THE LIKE

Llewellyn W. Evans, deceased, late of Orinda, Calif. (by Agnes J. Evans, executrix), assignor to Rheem Manufacturing Company, New York, N.Y.

Filed Sept. 20, 1968, Ser. No. 761,350
Int. Cl. B67b *7/30*, *7/38*
U.S. Cl. 30—21.5 **7 Claims**

Method of and apparatus for opening drums and other containers by removing the closure caps from the filler openings thereof. Typically, such a filler opening is located in the top wall or head of the drum, and it is an annular-rim-equipped opening through which the closure cap extends and within which it is confined by laterally extending annular flanges respectively disposed inside and outside of the drum on opposite sides of the rim.

The method of opening such drum includes the steps of enforcing substantial circularity upon the cap along the ring-shaped area thereof in engagement with the annular rim, and of then cutting the cap along such area, the enforced circularity of which prevents inadvertent cutting of the drum head and the opening-defining rim thereof. After the cap is so cut, the outer portion thereof is removed and the remaining portion, while being held, is pressed or driven downwardly through the opening to free the cap therefrom. The cap is



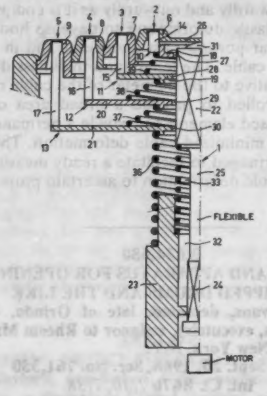
then deformed or collapsed while held within the drum to reduce its size and thereby permit it to be withdrawn through the opening. The apparatus includes a plurality of rollers that lie along a circle and one of which is adjustable inwardly and outwardly relative to the circumference of such circle to enable the rollers to be brought into rolling engagement with the cap to enforce such circularity thereon. An adjustable knife provided by the apparatus is engageable with the cap to cut the same along the area of circularity enforced thereon by the rollers.

3,624,681

RESILIENTLY SUPPORTED SHEAR PLATE

Frans Zuurveen, Emmasingel, Eindhoven, and Eduard Willem Tietjens, Oliemolenstraat, Drachten, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 22, 1969, Ser. No. 852,305
Claims priority, application Netherlands, Aug. 31, 1968, 6812446
Int. Cl. B26b *19/16*
U.S. Cl. 30—43.5 **8 Claims**



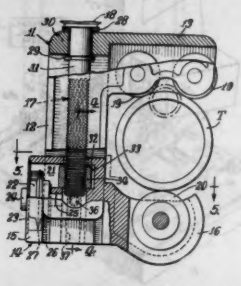
A dry-shaving apparatus having a single driving shaft and at least one shaving head which is actuated by the driving shaft and is adapted to be axially depressed and comprises a shear plate and a cooperating movable cutter member which is maintained in resilient engagement with the shear plate, the central shear plate being also supported by a separate, axially adjustable spring.

3,624,682

TUBE CUTTER

Leonard J. Kowal, Prospect Heights, Ill., assignor to I.T.E. Imperial Corporation

Filed May 8, 1969, Ser. No. 823,008
Int. Cl. B26d *1/22*
U.S. Cl. 30—102 **4 Claims**



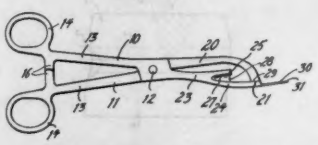
A tube cutter having a body defining a guide and a support portion. Rollers are provided on the support portion for supporting a tube to be cut. A holder is slidably mounted on the guide for movement toward and from the support portion and a cutting wheel is carried on the holder to bite into the tube supported on the support portion as a result of an advance of the holder toward the support portion. The holder is provided with a recess in which a second cutting wheel is provided. The cutting wheel is removably retained in the recess by means of a closure plate. The holder is moved on the guide by a threaded rod engaging a nut transversely adjustably positioned in a cavity in the holder.

3,624,683

SUTURE CUTTING AND REMOVAL INSTRUMENT

Arthur L. Matles, 4 East 78th St., New York, N.Y.

Filed Feb. 9, 1970, Ser. No. 9,850
Int. Cl. B26b *11/00*
U.S. Cl. 30—124 **6 Claims**



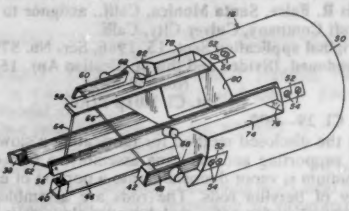
A suture cutting and removal instrument is provided which includes hinged members for suture gripping, one member having a suture-lifting portion and an integral cutting blade for severing the sutures.

3,624,684

BOREHOLE DEFORMATION GAGE

John G. McCaslin, Butte, Mont., assignor to The United States of America as represented by the Secretary of the Interior

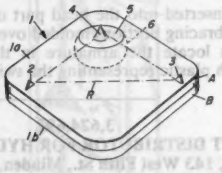
Filed Nov. 19, 1969, Ser. No. 878,127
Int. Cl. G01b *7/10, 7/14, 7/18*
U.S. Cl. 33—174 **7 Claims**



LVDT transducers in a deformation gauge respond to deformation stimuli for measuring subsurface stress patterns

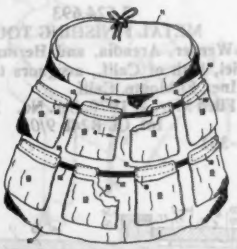
along multiple radial lines in a single plane perpendicular to the longitudinal axis of a borehole. The transducers are symmetrically grouped in a semicircular pattern and spaced along the axis of the gauge so that a maximum number of transducers fit within a small diameter. Similarly proportioned cantilever arms transmit deformation stimuli from the measurement plane to the spaced transducers. Stimuli of equal strength, because of the cantilever arm proportions, have the same effect on all transducers, regardless of the distance between the transducer and measurement plane.

3,624,685
MECHANICAL STRAIN OR DISPLACEMENT GAGE
Clarence O. Babcock, Denver, Colo., assignor to The United States of America as represented by the Secretary of the Interior
Filed Dec. 16, 1969, Ser. No. 885,514
Int. Cl. G01b *5/30*
U.S. Cl. 33—174 **10 Claims**



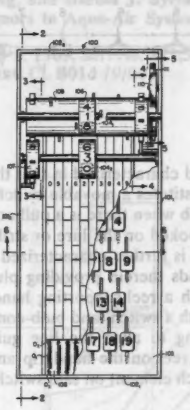
A displacement gage having three contact legs one leg of which is movable in all strain directions by being attached to a ball and socket joint while each of the other legs is immovable in the direction of said one leg but is movable normal to this direction. A mirror is attached to the ball and socket to translate movement of said one leg to a readout device. The two displacement directions are at right angles to one another to simultaneously provide Poisson's ratio and the modulus of elasticity.

3,624,686
POCKETED APRON FOR TEACHING COLOR RECOGNITION
Jean A. Beals, Route 8, Box 915 E, Pleasant Hill, Oreg.
Filed Nov. 21, 1969, Ser. No. 878,645
Int. Cl. G09b *1/06*
U.S. Cl. 35—8 R **1 Claim**



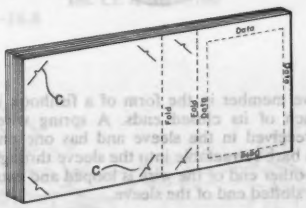
An apronlike article of apparel having strips of attachment material thereon with cooperating strips of pressure-sensitive material on the backside of a multitude of pockets for removable attachment to the apron body. The pockets are of various colors for the teaching of color recognition.

3,624,687
APPARATUS FOR TEACHING ADDITION OF PAIRS OF ONE-DIGIT NUMBERS
Lloyd A. Cagnolatti, 115 Patricia St., Gonzales, La., and John Drew, 3759 Jose Terrace, Jacksonville, Fla.
Filed May 28, 1970, Ser. No. 41,395
Int. Cl. G09b *19/02*
U.S. Cl. 35—31 C **9 Claims**



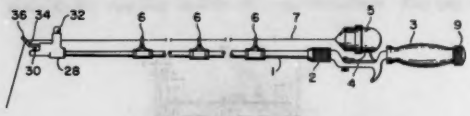
Apparatus comprising an educational toy for instructing beginning students in addition of pairs of one-digit numbers. Preselected pairs of numbers are displayed, each on a different rotating cylinder, or roll. Each roll of the pair is scribed with a set of one-digit numbers. Each is rotated through a series of fractional rotations, of constant angle, via action of a drive roll which rotates in similar manner, and which in turn is actuated by a series of keyed slide bars which represent answers to the problems displayed. When the correct key, of the keyboard, is manipulated, a roll of the scribed pair is rotated, in response to a movement of the drive roll, through a fraction of a revolution to present the next problem, and a signal to indicate a correct solution is given. No response is given to an incorrect solution.

3,624,688
PHOTO FRAME FORMS
Melvin M. Miller, 6206 Kellogg Drive, McLean, Va.
Filed Jan. 28, 1970, Ser. No. 6,421
Int. Cl. G09f *1/12*
U.S. Cl. 40—152.1 **5 Claims**



The photo frame form is a rectangular sheet of stiff paper adapted to be folded substantially midway of its length for making it stand upright on a horizontal surface, and having diagonal slits cut in the four corners of at least one of the folded portions for receiving the corners of a photo print to be framed therein, and having a gummed coating on at least one side of said form for adhesively mounting at least one of the folded portions in an album if desired, space being provided on the uncovered sides of the folded portions for data inscription relative to the framed photo prints.

3,624,689
FISHING ROD WITH STRIKE-SIGNALLING MEANS
Frank F. Rizzo, 1429 Chapman Ave., North Madison, Ohio
Filed Mar. 5, 1970, Ser. No. 16,856
Int. Cl. A01k 97/12
U.S. Cl. 43—17 5 Claims



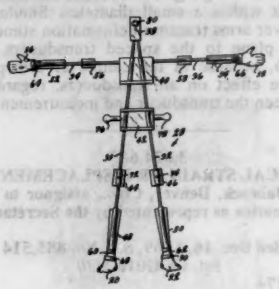
A fishing rod characterized in that the line guide at the tip of the rod constitutes a movable switch element which lights a flashlight bulb when there is a pull on the line as caused by a fish being hooked on the lure or striking thereat. The fishing rod herein is further characterized in that it has electric conducting leads therein providing plug-socket connections at its ends with a reel-supporting handgrip having batteries therein and with a switch- and bulb-containing unit, said connections serving to align the line guides on the rod with respect to the reel on the handgrip and with respect to the line guide switch element on said switch- and bulb-containing unit.

3,624,690
FISHHOOK WITH RETRACTABLE BARB
James G. Ashley, P.O. Box 1 Middleboro Road, East Freetown, Mass.
Filed Nov. 4, 1969, Ser. No. 873,926
Int. Cl. A01k 83/00
U.S. Cl. 43—43.16 1 Claim

A sleeve member in the form of a fishhook is slotted adjacent each of its closed ends. A spring wire member is slidably received in the sleeve and has one end formed to provide a barb retractable into the sleeve through one slotted end. The other end of the wire is looped and extends through the other slotted end of the sleeve.

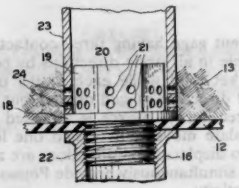
3,624,691
REALISTIC TOY FIGURE
George E. Robson, Torrance, and Berne E. Danielsen, Pacific Palisades, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 20, 1970, Ser. No. 13,075
Int. Cl. A63h 3/36
U.S. Cl. 46—162 2 Claims

A toy figure with an armature which includes bendable wires and flesh-colored plastic molded over hand and foot areas of the wires. The armature is covered with a soft plastic in a form representing the figure of an aquanaut covered with a rubber swimsuit at all regions except the hands and feet. A separate face member of a material which can be easily



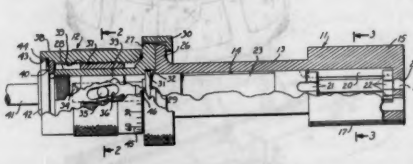
painted, is inserted into the head part of the figure. The armature has bracing portions molded over certain parts of the wire, which locate the armature in the mold where it is covered with plastic representing the swimsuit.

3,624,692
NUTRIENT DISTRIBUTOR FOR HYDROPONIC CELLS
Ivan E. Lux, 143 West Fifth St., Minden, Nebr.
Filed Oct. 29, 1969, Ser. No. 872,239
Int. Cl. A01g 31/02
U.S. Cl. 47—1.2 6 Claims



A hydroponic cell, filled with granular material, is provided with a flow path for liquid nutrient extending through one of its walls. The terminal portion of the flow path in the cell is encircled by an apertured member which is movable relatively to the terminal portion of the flow path whereby the flow path is cleared of roots which are either cut off or wiped back into the cell.

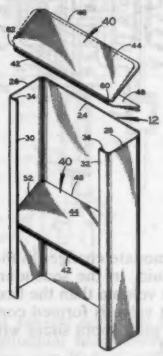
3,624,693
METAL FINISHING TOOL
Wilfred M. Werner, Arcadia, and Herman P. Hommerson, San Gabriel, both of Calif., assignors to Advance Honing Products, Inc., El Monte, Calif.
Filed Mar. 4, 1970, Ser. No. 16,317
Int. Cl. B24b 9/02
U.S. Cl. 51—351 4 Claims



A tool for honing, grinding, lapping or otherwise finishing internal cylindrical surfaces comprising an abrading head unit including a hollow mandrel having a plurality of slots in the wall thereof through which abrasive stones are slidable

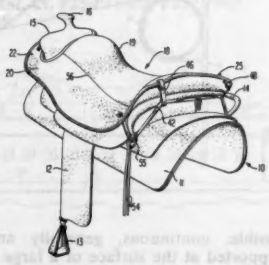
and a shaft rotatable to cause inward and outward adjustment of the stones. The unit is readily removably connected to an actuator unit adapted to rotate the head unit and to adjust the shaft whereby to adjust the stones relative to the mandrel.

3,624,694
REINFORCED STUD CONSTRUCTION
Henry L. Byland, Lighthouse Point, Fla., assignor to Futuristic Building Products Inc., Northbrook, Ill.
Filed Dec. 4, 1969, Ser. No. 882,209
Int. Cl. E04c *3/32*
U.S. Cl. 52—241 **8 Claims**



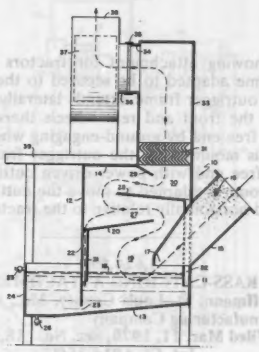
A reinforced stud construction for use in partitions of buildings, wherein a channel member has a base and side flanges with retainers at outer edges of the side flanges, and a stiffener fits in the channel with end edges of the stiffener providing backing for the channel's flanges to stiffen them for example when a screw or nail is being driven into the flange. The stiffener flexes resiliently when inserted into the channel so as to hold itself in place.

3,624,695
REMOVABLE SADDLE SEAT
John R. Roberts, Jr., P.O. Box 106, Buford, Ga.
Filed Nov. 17, 1969, Ser. No. 877,288
Int. Cl. B68c *01/20*
U.S. Cl. 54—46 **5 Claims**



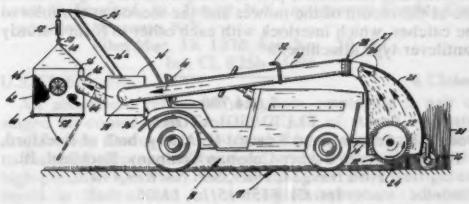
A removable saddle seat for horse saddles and the like, which includes a seat section for placement on the seat of the saddle and side jockeys which extend down from the side edges of the seat section. The side jockeys extend forwardly and curve around the pommel of the saddle, and tie straps are connected to the forward and rearward portions of the side jockeys. The tie straps at the forward portion of the side jockeys are normally tied together in front of the pommel, while the tie straps at the rearward portions of the side jockeys are normally tied together behind the cantle, to connect the forward and rearward portion of the saddle seat to the saddle. The saddle seat comprises an outer leather covering and an internal layer of padding which includes foam rubber and a tufted fabric.

3,624,696
GAS SCRUBBING APPARATUS
Irving Cohen, Flushing, and Harold J. Byrne, Garden City, both of N.Y., assignors to Aqua-Air Systems, Corp., New York, N.Y.
Filed May 2, 1969, Ser. No. 821,318
Int. Cl. B01d *19/00*
U.S. Cl. 55—223 **4 Claims**



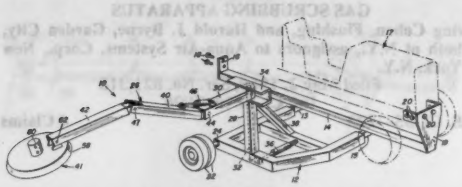
Air contaminated with particles enters an enclosure at relatively high velocity through an inlet passage having a water spray blanket projected thereacross. Within the enclosure, the air impacts against a water pool maintained at a constant level and has its direction of flow changed abruptly thereabove several times by a system of overlapping baffles. Extreme turbulence is induced in this zone and means are provided to induce some recirculation toward the water pool. Substantially cleaned air expands through a moisture eliminator into a drying chamber and discharges through the outlet of a blower which also serves to move the air through the entire apparatus.

3,624,697
FORAGE PLOT HARVESTER
William W. Fuller, 424 Kingsway, Muskogee, Okla.
Filed Feb. 3, 1970, Ser. No. 8,252
Int. Cl. A01d *43/00*
U.S. Cl. 56—16.6 **7 Claims**



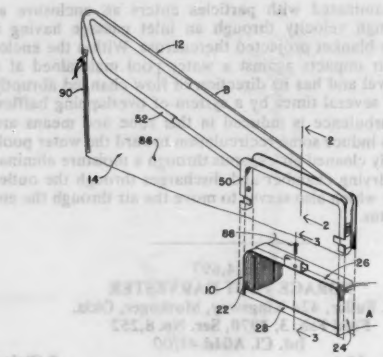
A forage plot harvester including a vehicle, a flail mower, a vacuum device and a weighing container, the weighting container being connected through the vacuum device to receive forage cut by the mower for weighing selective cut forage increments.

3,624,698
BRUSH-MOVING ATTACHMENT FOR TRACTOR
Nelson Storm, 213 Perry, Rossville, Ill.
Filed Aug. 17, 1970, Ser. No. 64,188
Int. Cl. A01d *35/26*
U.S. Cl. 56—25.4 **8 Claims**



A brush-mowing attachment for tractors comprising an outrigger frame adapted to be secured to the chassis of the tractor. The outrigger frame extends laterally from the tractor between the front and rear wheels thereof and is supported at its free end by ground-engaging wheels. An articulated boom is mounted on the outrigger frame and is provided at its free end with power driven cutting means. The articulated boom is adapted to move the cutting means both vertically and horizontally relative to the tractor.

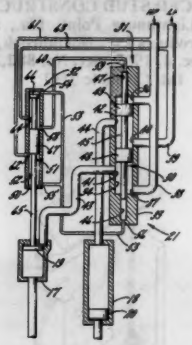
3,624,699
GRASS-CATCHING ATTACHMENTS
Ralph L. Hoffmann, St. Louis County, Mo., assignor to Perfection Manufacturing Company
Filed Mar. 11, 1970, Ser. No. 18,502
Int. Cl. A01d *35/22*
U.S. Cl. 56—202 **2 Claims**



A device for attaching grass catchers to power driven lawn mowers, and discloses a pair of complementary rigid frames, one at the mouth of the mower and the second at the inlet to the catcher, which interlock with each other to form a sturdy cantilever-type attachment.

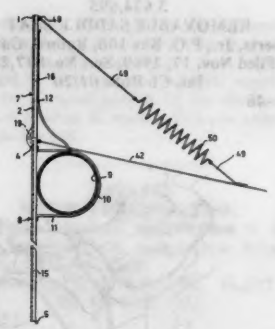
3,624,700
FLUID ISOLATOR
Donald K. Schaeve, and Edward H. Ashby, both of Rockford, Ill., assignors to Barber-Coleman Company, Rockford, Ill.
Filed Nov. 24, 1969, Ser. No. 879,490
Int. Cl. F15b *15/18, 11/08*
U.S. Cl. 60—51 **14 Claims**

A fluid isolator for use between a high-pressure fluid line and a low-pressure fluid line for actuating one of a plurality of operators from a common source of pressure fluid. Through first and second free-floating pistons mounted in first and second cylinders, power is transferred from a primary fluid circuit to a secondary fluid circuit to actuate the operator. A valving arrangement comprising a spool-type control valve actuated by a spool-type pilot valve is operable to direct high-pressure fluid alternately to the cylinders to drive the pistons through power strokes. The pilot spool is physically attached to the first piston so that the movement of the piston shifts the pilot spool to cause the control spool



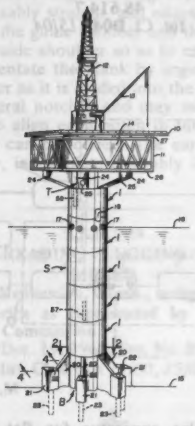
to shift. To accommodate changes in the volume of the fluid, herein hydraulic fluid, in the secondary circuit, the second cylinder is larger in volume than the first cylinder. In one embodiment, the pilot valve is formed concentric with the control valve, and the pilot spool slides within a central passage in the control spool.

3,624,701
OIL RECLAIM CURTAIN
William L. Kingsley, El Cerrito, Calif., assignor to Warren J. Curry and Norman G. Daniels, San Lorenzo, Calif., part interest to each
Filed Mar. 5, 1970, Ser. No. 16,723
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 A **7 Claims**



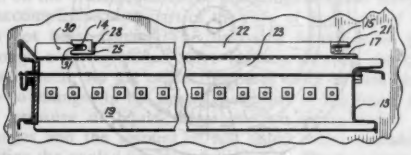
A collapsible, continuous, generally annular, curtain floatably supported at the surface of a large body of water, and projecting above and below said surface to retain within the area surrounded by said curtain, oil surfacing from a leak or blowout occurring in a subsea oil well during or after drilling. Guy lines connected with and extending radially outwardly from said curtain have anchoring means at their outer ends for quick anchoring of the curtain around the oil-surfacing area, said lines including yieldable means connected with the portion of the curtain projecting above the surface of the water to enable any section of the curtain to yield radially inwardly under outside wave force thereagainst to permit water to spill into the area enclosed by the curtain but to resist outward movement of such section.

3,624,702
OFFSHORE PLATFORM SUPPORT
Homayoun J. Meheen, 6464 West 14th Ave., Denver, Colo.
Filed Oct. 20, 1969, Ser. No. 867,848
Int. Cl. E02b *17/02*; E02d *5/30*
U.S. Cl. 61—46 11 Claims



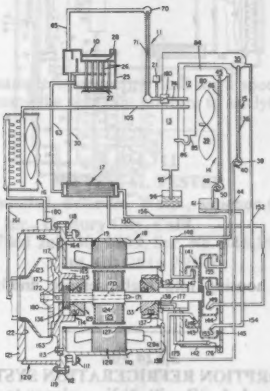
A column formed of annular segments made of reinforced concrete, having longitudinal holes therethrough in which prestressing tendons are installed, is utilized to support an offshore-drilling platform. Holes in outwardly extending ribs or wings of the top and bottom segments guide the piles into the sea floor, while being driven. The piles are cut off at the top of the outwardly radial ribs of the lower segment. In the larger sizes, the bottom segment is provided with a floor having holes with removable plugs, for inflow of sea water to sink the column at the installation site. Holes provided with removable plugs adjacent the bottom of the column permit the column to be used for separating a mixture of oil and sea water and sand. Such columns may also be used for oil storage purposes. Larger platforms, such as consisting of a number of similar platform components, may be supported by two or more columns.

3,624,703
ICEMAKER CUTTER-GRID-MOUNTING MEANS
George E. Pavek, St. Paul Park, Minn., assignor to Whirlpool Corporation
Filed Dec. 5, 1969, Ser. No. 882,632
Int. Cl. F25d *19/00*; F25c *1/00*
U.S. Cl. 62—298 14 Claims



Apparatus for releasably mounting a subdividing heated wire grid in the cabinet of an icemaker in which a slab of ice is formed and this slab transferred to the slab dividing grid all within the cabinet. This invention includes improved means including interengaging projections and projection receiving means such as slots together with movable catches for some of the slots with the result that the interengagement of the projections and slots provides effective but easily released mounting means for positioning the subdividing grid in the cabinet. The invention is particularly useful for large commercial icemakers in which there is located a plurality of the ice slab forming means positioned closely together vertically and in which the subdividing means or heated grid is located closely adjacent each vertical pair of slab forming means which in each instance is usually a refrigerant evaporator plate.

3,624,704
ABSORPTION REFRIGERATION SYSTEM
Louis H. Leonard, Jr., Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 18, 1970, Ser. No. 20,769
Int. Cl. F25b *15/06*
U.S. Cl. 62—476 4 Claims

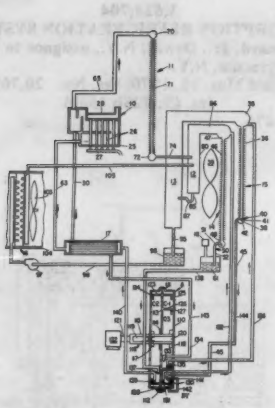


An absorption refrigeration system employing a pair of staged air-cooled absorbers and a pair of staged adiabatic evaporators. Strong solution from the generator passes first to the low-pressure absorber from which it flows through the high-pressure absorber back to the generator. Refrigerant liquid is flash-cooled in the high-temperature adiabatic evaporator stage from which it passes to the low-temperature adiabatic evaporator for further flash-cooling and from which it is passed through a refrigerant heat exchanger for cooling a refrigeration load and back to the high-temperature adiabatic evaporator. Liquid transfer apparatus is provided for pumping liquid in the system driven by a single hermetically sealed motor, the shaft of which mounts at one end a centrifugal pump for circulating liquid refrigerant and at its opposite end a scoop pump for circulating absorbent solution. The shaft is journaled in tapered refrigerant cooled and lubricated bearings which additionally function as seal means to minimize the possibility of intermixture of refrigerant and solution.

3,624,705
ABSORPTION REFRIGERATION SYSTEM
Louis H. Leonard, Jr., Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 18, 1970, Ser. No. 20,771
Int. Cl. F25b *15/06*
U.S. Cl. 62—476 4 Claims

An absorption refrigeration system employing a pair of staged air-cooled absorbers and a pair of staged adiabatic evaporators. Strong solution from the generator passes first to the low-pressure absorber from which it flows through the high-pressure absorber back to the generator. Refrigerant liquid is flash-cooled in the high-temperature adiabatic evaporator stage from which it passes to the low-temperature adiabatic evaporator for further flash-cooling and from which it is passed through a refrigerant heat exchanger for cooling a refrigeration load and back to the high-temperature adiabatic evaporator. The system further embodies a scoop pump for circulating solution to and from the absorber and generator which includes a hermetic housing formed with an annular embossment and mounting therewithin a rotatable trough

provided with an annular flange which cooperates with the embossment to provide a hydrodynamic seal dividing the interior of the housing into high-pressure and low-pressure zones.



3,624,706

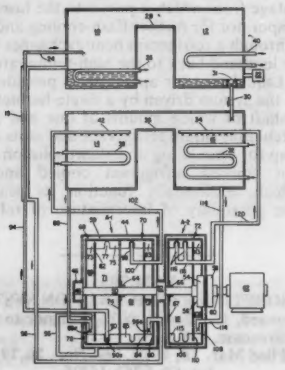
ABSORPTION REFRIGERATION SYSTEM

Louis H. Leonard, Jr., Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 18, 1970, Ser. No. 20,773

Int. Cl. F25b *15/06*

U.S. Cl. 62—476 **5 Claims**



An absorption refrigeration system which includes a scoop pump having a stationary housing mounting therein a plurality of scoop pumps for circulating absorbent solution through the system. Each of the pumps comprises a rotatable pan having at least one inlet conduit leading thereto and at least one eduction conduit leading therefrom. The pan is divided into a fluid accelerating chamber and a pickup chamber and is provided with fluid acceleration inducing vanes effective to assist the rotation of fluid upon entry to the pan so that it is at substantially the circumferential velocity of the pan, thereby significantly improving pump efficiency.

3,624,707

PATTERN TICKLER MACHINE FOR FLAT HOSIERY KNITTING MACHINES

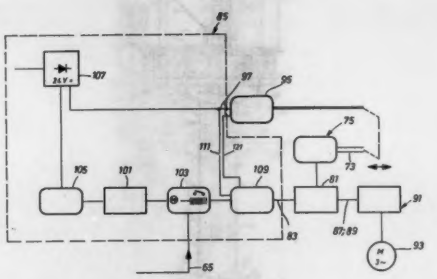
Hans Scheller, Farundau, Germany, assignor to Gebr. Scheller Textilmaschinenfabrik GmbH, Eislingen-Fils, Germany

Filed Feb. 4, 1970, Ser. No. 8,607

Claims priority, application Germany, Sept. 26, 1969, P 19 48 614.7

Int. Cl. D04b *15/04*

U.S. Cl. 66—96 **10 Claims**



A pattern tackler apparatus for flat hosiery knitting machines having at least one tickler needle supported by a pattern tickler rod, and a device for the positioning of the tickler needle controlled by a programmed control device, control means connected to the tickler needle and means for regulating the control means so that the stitching needle is picked up according to a program and transferred to a neighboring needle and forms a new stitch in the next following row.

3,624,708

HANDLING WORKPIECES

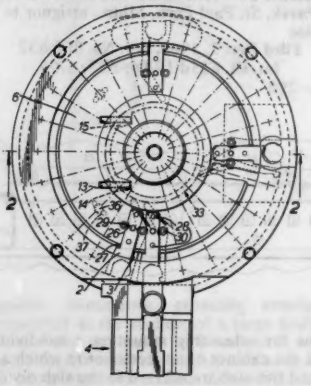
Barry Anthony Richardson, Coventry, England, assignor to Wickman Machine Tool Sales Limited, Coventry, England

Filed Oct. 1, 1969, Ser. No. 862,816

Claims priority, application Great Britain, Oct. 2, 1968, 46,760/68

Int. Cl. B21d *43/20*; **B65g** *47/24*

U.S. Cl. 72—424 **18 Claims**



A feeding device comprising a carrier which is to be loaded with a workpiece and which has a fixed arm and a movable arm, the movable arm being provided with means to urge it towards the fixed arm and a notch being formed between the two arms to receive the workpiece in a particular orientation, and a loading device being provided to load the workpiece into the notch in this particular orientation.

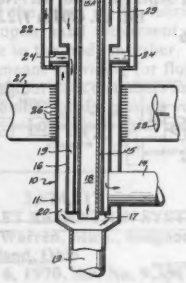
The loading device preferably comprises a pusher member which is movable towards the opening of the notch and a guide member which is movable along a line transverse to the direction of movement of the pusher member in the plane of the notch, the guide member being displaced by the workpiece as it is pushed into the notch and in turn acting to press the workpieces against a fixed shoulder. Where the feeding device is to handle regular-polygonal blanks the guide shoulder is preferably straight, and edges at the ends of the pusher member, the guide member and the movable arm are inclined to the guide shoulder so as to engage sides of each blank and to orientate the blank by urging one side against the guide shoulder as it is loaded into the notch. This carrier may possess several notches and may move relative to the loading device to align each notch in turn with the loading device so that it can be loaded. The carrier may be in the form of a rotary, index plate assembly in use in a coining press.

3,624,709

CONTINUOUS-READING PLUGGING-TEMPERATURE METER

John P. Petrek, Kennewick, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 19, 1969, Ser. No. 886,631
Int. Cl. G01n *11/00, 25/02*
U.S. Cl. 73—61 LM **8 Claims**



A continuous-reading plugging-temperature meter includes an orifice in the flow path of a liquid metal. Prior to its passage through the orifice, the liquid metal first is cooled to a temperature below that at which impurities in the liquid metal will deposit on the orifice and then is reheated to a steady-state condition in which impurities going out of solution on the orifice equal those going into solution. Reheating is accomplished with part of the flow of liquid metal which has not been cooled. The uncooled liquid metal passes through a spring-loaded valve before reheating the cooled liquid metal. As the orifice becomes more or less plugged due to changes in the impurity content of the liquid metal, the pressure of liquid metal on the spring-loaded valve changes and the amount of hot liquid metal available for heating the cooled liquid metal changes. The temperature of the liquid metal near the orifice thus gives an indication of the impurity content of the liquid metal.

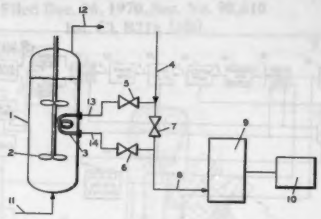
3,624,710

SYSTEM FOR ANALYSIS

Don E. Carter, Creve Coeur, and Henry S. C. Yang, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed July 3, 1969, Ser. No. 838,974
Int. Cl. G01n *13/00*
U.S. Cl. 73—61.1 R **11 Claims**

A fluid mixture is analyzed by permeating at least one component through a permeable or porous material for a period of time into a collection zone, sweeping out the collected fluid sample by a carrier fluid for a specific period of time, and passing the resultant mixture to analytical means.

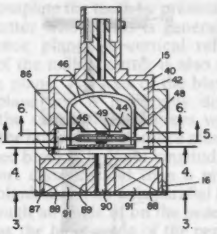


3,624,711

MATERIAL TESTER

Milton F. Zeutschel, Bellevue, Wash., assignor to Automation Industries, Inc., Century City, Calif.

Filed July 30, 1969, Ser. No. 846,191
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.7 **29 Claims**



A combination acoustical eddy current search unit is described for use in an ultrasonic nondestructive test instrument. The eddy current transducer of the search unit provides vibrational projections into a workpiece under test and the acoustical transducer of the search unit detects the acoustical vibrations and any change in mode thereof.

3,624,712

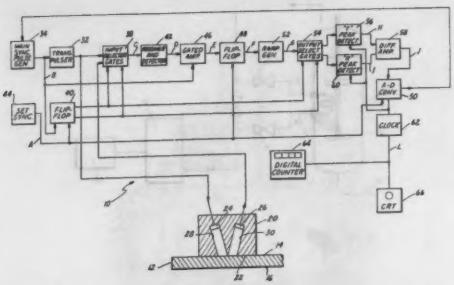
ULTRASONIC PULSE ECHO THICKNESS-MEASURING DEVICE

Frederick G. Weighart, Brookfield, Conn., assignor to Automation Industries, Inc., Century City, Calif.

Filed July 22, 1969, Ser. No. 843,301
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.9 **5 Claims**

An ultrasonic thickness-measuring instrument having a dual transducer search unit wherein a transmitter-receiver transducer and a receiver transducer are mounted at an angle to provide overlapping beam patterns below the workpiece surface and are recessed to provide a fixed time delay. The transmitter-receiver transducer measures the distance to the surface, and the receiver transducer measures the distance to the back surface. The input of a receiver and ramp generator is alternately connected to each of the transducers, and the ramp function outputs are alternately connected to peak detectors to give two signals representative of the distance to

the front surface and to the rear surface of the workpiece. The two signals are applied to a difference amplifier, and the



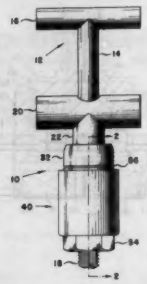
difference output is digitized to provide a digital representation of workpiece thickness.

3,624,713

LOAD-LIMITING FASTENING DEVICE

Leonard Z. Goldberg, Canoga Park, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Sept. 23, 1969, Ser. No. 860,259
Int. Cl. G01l 5/06
U.S. Cl. 73—141 A **5 Claims**



A load-limiting fastening device is disclosed which is used so as to visually indicate when a desired load has been placed on a bolt. The device includes conventional trunnions and a trunnion stem which are adapted to be located around a bolt extending through the stem. A series of Bellville spring washers are held with respect to the end of the stem remote from the trunnions by a moveable retainer. When a bolt is located so as to extend through the stem, the spring washers and the retainer and when the nut is torqued down on the bolt, pressure is applied so as to tend to compress the washers and so as to simultaneously move the retainer. Indicator means such as a groove are provided on the stem so that the position of the retainer with respect to such indicator means will indicate the loading on the bolt.

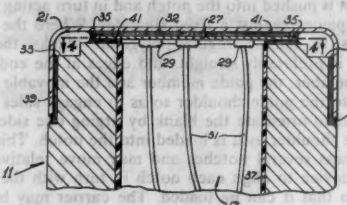
3,624,714

PIEZORESISTIVE MINIATURE PRESSURE TRANSDUCER

James E. Frassrand, Arcadia, Calif., assignor to Dynasciences Corporation, Los Angeles, Calif.

Filed Apr. 23, 1970, Ser. No. 31,258
Int. Cl. G01l 9/04
U.S. Cl. 73—398 AR **9 Claims**

A miniature pressure transducer has an edge-supported flexible diaphragm with a semiconductor chip providing a bridge arrangement of the piezoresistive strain gauge areas bonded to its inner surface to position active tension gage areas at the center of the diaphragm and active compression gage areas at the periphery. The chip is also bonded along its outer periphery to the annular inner surface of the transducer body supporting the edges of the diaphragm to prevent slippage during deflection of the diaphragm, thus placing the effective compression gage areas of the chip outside of the neutral circle within the compression zone on the diaphragm.

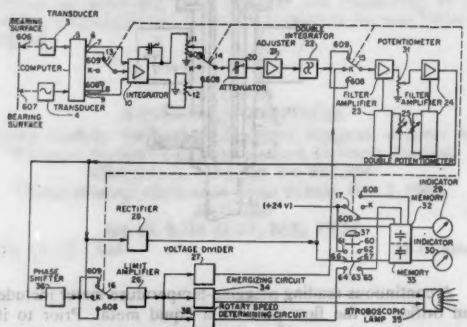


3,624,715

BALANCING MACHINE FOR SUBCRITICAL OPERATION INDICATING MAGNITUDE AND ANGULAR POSITION OF UNBALANCE MASS

Paul Holdinghausen, Bickenbach; Karl Homilius, Nieder-Ramstadt, and Alfred J. Giers, Rossdorf, all of Germany, assignors to Carl Schenck Maschinenfabrik G.m.b.H., Darmstadt, Germany

Filed Sept. 18, 1968, Ser. No. 760,605
Int. Cl. G01m 1/22
U.S. Cl. 73—466 **7 Claims**



A computer including a logarithmic voltage divider and potentiometer for taking into account the balancing radii is connected to mechanical to electrical transducers at the bearing surfaces of a balancing machine for subcritical operation and functions to separate the balancing planes. A filter amplifier arrangement which is adjustable to the bearing frequency is coupled to the computer and the output of such filter amplifier arrangement is coupled to its input via a feedback path which includes a limit amplifier. An indicator connected to the filter amplifier arrangement has a calibrated amplification degree for frequency selective direct determination of the magnitude of the unbalance mass. A stroboscope connected to the limit amplifier determines the angular position of the unbalance mass.

3,624,716

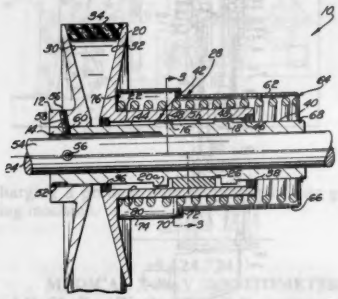
ADJUSTABLE SPEED PULLEY

Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Apr. 20, 1970, Ser. No. 30,113
Int. Cl. F16h 55/52
U.S. Cl. 74—230.17 **13 Claims**

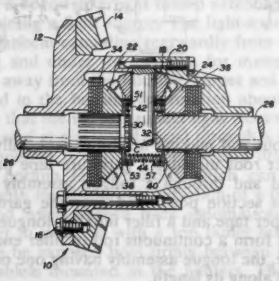
An adjustable speed pulley comprises first and second flange members which define a belt-receiving groove

therebetween. A body member supports the second flange member for axial movement toward and away from the first flange member. The second flange member and the body member have cooperating bearing surface portions. The body member and the second flange member also define a pair of lubricant chambers on opposite axial sides of the cooperating bearing surface portions. Seal means for sealing the lubricant chambers is carried by the second flange member and is movable with the second flange member upon



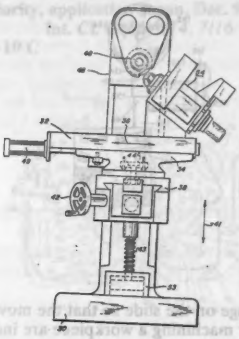
axial movement thereof. One of the lubricant chambers increases in volume and the other of the lubricant chambers decreases in volume upon axial movement of the second flange member relative to the body member. The adjustable speed pulley includes means providing for fluid communication between the pair of lubricant chambers and for directing lubricant from the chamber of decreasing volume into the chamber of increasing volume upon axial movement of the second flange member.

3,624,717
AXLE SHAFT RETENTION SYSTEM
Richard K. Brubaker, Warren, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Feb. 6, 1970, Ser. No. 9,354
Int. Cl. F16h *1/44, 1/40;* **F16b** *21/09*
U.S. Cl. 74—711 **7 Claims**



A differential drive mechanism having a housing includes a pair of oppositely extending rotatable shafts. The shafts are coaxial and have spaced ends. A keyed element cooperates with the shafts to maintain said shafts within the housing and to prevent excessive axial movement thereof with respect to the housing. The keyed element also is effective to exert a biasing force on side gears within the housing to bias said side gears into engagement with clutch plates when said keyed element is used in a limit slip differential type mechanism.

3,624,718
METHOD FOR PRODUCING A BALL-END MILL
Thomas A. Ribich, Cleveland, Ohio
Filed Dec. 16, 1970, Ser. No. 98,610
Int. Cl. B21k *5/00*
U.S. Cl. 76—101R **7 Claims**

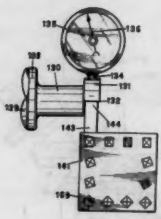


A ball-end end mill is produced by a method and apparatus which performs machining operations on a ball-end end mill blank which blank includes a shank from which extends a plurality of helically extending peripheral teeth which terminate short of the end of the blank which end is a substantially hemispherical surface. The end of the blank is machined so as to complete the teeth by presenting the end to a rotating milling cutter whose axis is generally parallel to a horizontal reference plane. A vertical reference plane normal to the axis of the milling cutter is also normal to the horizontal reference plane. The axis of the blank lies in this vertical reference plane and is preferably disposed at an acute angle of on the order of 35 degrees with the hemispherical end above the horizontal reference plane. The end of the angularly disposed blank is brought longitudinally into the milling cutter a short distance and then a pivoting action occurs to pivot the blank about an axis parallel to the vertical reference plane through an angle of on the order of the same number of degrees as the helix angle of the peripheral teeth, to arcuately form the cutting face on one tooth and the trailing edge on an adjacent tooth. The blank and cutter are separated, the pivoting action reversed, the blank is indexed about its own axis to bring another portion of the end of the blank into position relative to the cutter, and the above operation is repeated to arcuately form the cutting face on another tooth and the trailing edge on another adjacent tooth. This procedure is repeated until all of the teeth are formed. The teeth are finally finish formed by use of another milling cutter of slightly different form by essentially the same operations. A machining operation is next performed on the end of the formed teeth where they all meet at the axis of the tool which involves making an axial cut or notch in all but two diametrically disposed teeth, to separate them slightly from the tool axis. The above operations are accomplished in the unhardened condition of the blank. The blank is then hardened and thereafter ground to form a cutting edge on the two diametrically disposed teeth, each of which extends substantially to the axis of the tool and includes primary and secondary relief surfaces. Cutting edges are also ground on the other teeth and include primary and secondary relief surfaces.

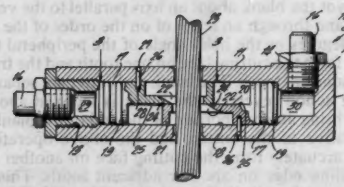
3,624,719
METHOD FOR PRESETTING A LATHE TOOL
Romeu Romi, Sao Paulo, Brazil, assignor to Industrias Romi S.A., Sao Paulo, Brazil
Original application Nov. 1, 1967, Ser. No. 679,698, now Patent No. 3,548,693. Divided and this application Oct. 28, 1970, Ser. No. 084,793
Int. Cl. B23b *1/00*
U.S. Cl. 82—1 C **8 Claims**

A cross tool slide with a master bar is set in a zero position in the main axis of a lathe whereupon indicating counters for

the distance of displacement of the slide are set to zero. A tool is substituted for the master bar and also set to a zero position by a gauge on the slide so that the movements of the slide and tool for machining a workpiece are indicated by the indicating counters.



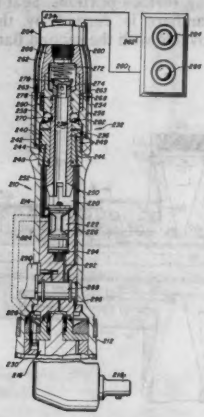
3,624,720
CABLE CUTTER
Elmer Laky, Cranford, N.J., assignor to Breeze Corporation, Inc., Union and Breeze Corporations, Inc., Union, N.J.
Filed Apr. 27, 1970, Ser. No. 31,949
Int. Cl. B23d *15/14*
U.S. Cl. 83—198 **5 Claims**



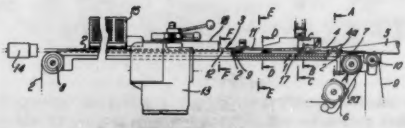
An emergency cable cutter in which opposed pistons are provided with overlapping cable-cutting blades. The blades have cable-cutting openings therein through which the cable is threaded. Upon the application of pressure to the pistons they are driven toward each other causing the knife edges on the openings to sever the cable. Either of the pistons alone, can sever the cable in the event of failure of the other.

3,624,721
SIGNAL-TRANSMITTING COUPLING FOR PNEUMATIC TOOL
William Workman, Jr., 15688 Longview Lane, Spring Lake, Mich.
Filed June 26, 1970, Ser. No. 50,205
Int. Cl. F01b *25/26*; F16t *35/00*
U.S. Cl. 91—1 **8 Claims**

A quick release coupling for pneumatic tools operable to connect a compressed-air supply line to the tool and including means for transmitting a signal from the tool to a remote indicating device. One embodiment of the coupling in combination with a tool includes electrical conductors in the coupling in communication with a pressure switch in the tool and a remote indicator device. An alternate embodiment comprises a coupling having passageways for transmitting a pressure signal from the tool to a remote fluid-actuated indicator.



3,624,722
CONTINUOUS ROD MAKING MACHINES
Horace A. Stone, London, England, assignor to Molins Machine Company Limited, London, England
Filed Apr. 7, 1970, Ser. No. 026,315
Claims priority, application Great Britain, Apr. 10, 1969, 18,392/69
Int. Cl. B31d
U.S. Cl. 93—1 C **8 Claims**

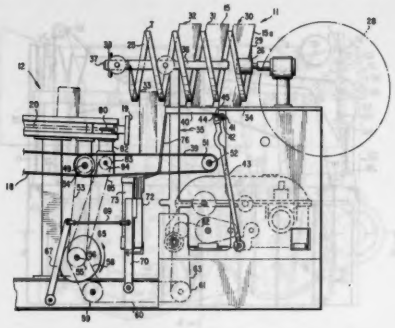


A continuous rod making machine, especially for making cigarette filter rods includes a garniture tape passing over a garniture bed and through a tongue assembly of inverted-channel cross section positioned over the garniture bed to carry a wrapper tape and a filler into the tongue to compress the filler and form a continuous rod of filler enclosed by the wrapper tape, the tongue assembly having one or more divergent portions along its length.

3,624,723
AUTOMATIC BAG ACCUMULATING, ADVANCING AND CHARGING APPARATUS
Donald R. Cannon, West Monroe, La., assignor to Olinkraft, Inc.
Filed July 22, 1970, Ser. No. 057,100
Int. Cl. B65h *33/00*
U.S. Cl. 93—93 DP **15 Claims**

An apparatus and method for collecting paper bags as they are being discharged from bagmaking machinery, and for ac-

cumulating the same in collated groups of equal bag numbers



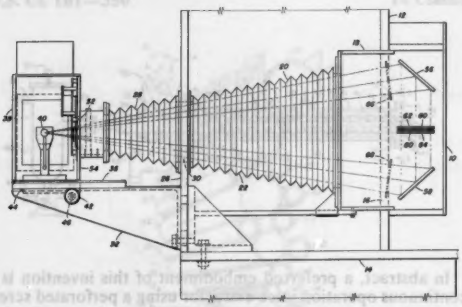
and charging a predetermined number of bag groups into a bundling machine.

3,624,724

MEDICAL X-RAY SENSITOMETER

Barnard C. Sheffer, Binghamton, N.Y., assignor to GAF corporation, New York, N.Y.

Filed Feb. 12, 1970, Ser. No. 10,948
Int. Cl. G03b 27/70
U.S. Cl. 95—1 R 6 Claims



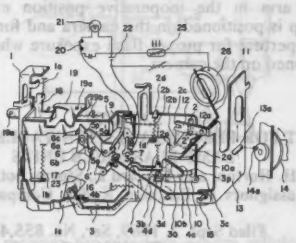
A rectangular housing is provided with a rear wall opening from which a bellowslike light tunnel extends to the front of a box containing a light source. The light-source box is carried by a platform extending rearwardly from the bottom of the housing and under the bellows, for manual adjustment toward and away from the housing. Upper and lower mirrors are mounted in the housing for rotation about parallel axes arranged so that the mirrors reflect light from such source as they are rotated at a selected speed through a single cycle of 360°. The housing is also provided with a drawer assembly carrying a bottom tablet holder which can be manually pulled out with the drawer for insertion of a film strip to be exposed; and when pushed back automatically locks such tablet holder in position with a top tablet holder, with the film strip to be exposed held firmly between multistep sensitometer tablets mounted in the holders. The film strip is thus held for exposure between the mirrors in a central horizontal plane, with the upper surface of the film facing the upper mirror and the lower surface of the film facing the lower mirror. Suitable light aperture plates are disposed in the housing between the mirrors and light source, and the mirrors are rotated in angular synchronism with each other, and with a shutter in the front of the light box, whereby both sides of two 35 mm. wide × 10 in. long sensitometric film strips, or a single film strip 70 mm × 10 in. long, can be automatically exposed from such single light source, for a selected time interval, at the end of which the top tablet holder retracts, releasing the drawer assembly for removal of the exposed film, and reloading thereof with the next film strip or strips to be exposed.

3,624,725

CAMERA HAVING A MECHANISM FOR AUTOMATICALLY CHANGING FROM AN AUTOMATIC PROGRAMMING EXPOSURE RANGE TO A FLASH AUTOMATIC EXPOSURE RANGE

Tatsuo Kobayashi, Osaka, and Hiroshi Ueda, Nara, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 9, 1969, Ser. No. 790,001
Claims priority, application Japan, Dec. 9, 1968, 43/683
Int. Cl. G03b 7/14, 7/16
U.S. Cl. 95—10 C 3 Claims



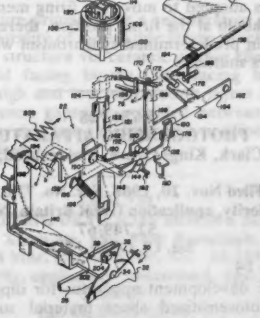
In an automatic exposure camera for changing from the minimum diameter of the camera diaphragm and the highest speed of the shutter to the maximum diameter of the diaphragm and the lowest speed of the shutter, namely, from the minimum exposure quantity to the maximum exposure quantity, in accordance with the indicator position of an exposure meter, a control stroke is provided for changing the shutter speed from the highest speed to the lowest speed of the shutter which is appropriate for the flash photographing while maintaining the diaphragm diameter constant, in accordance with the indicator position, and a control stroke for changing the diaphragm from the minimum diameter to the maximum diameter while maintaining shutter speed constant, and when the indicator position turns the shutter speed to the lowest speed and is in a location where the diaphragm takes the maximum diameter, the camera is changed over automatically to the automatic flash photographing and controls the diaphragm diameter in accordance with the photographic distance, while keeping the shutter speed in the lowest.

3,624,726

FLASH-FIRING AND SENSING MECHANISM FOR CAMERA OR ATTACHMENT ADAPTED TO USE PERCUSSIVELY FIREABLE FLASHLAMPS

William H. Horton, and Chester W. Michatek, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 14, 1969, Ser. No. 850,701
Int. Cl. G03b 19/00
U.S. Cl. 95—11 27 Claims



A camera or attachment, adapted to receive and fire percussively ignitable flashlamps, is provided with a pivotal sensing and actuating arm that mechanically senses the

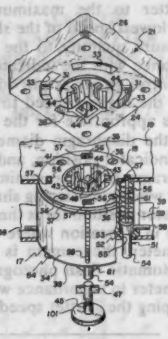
operative or inoperative condition of the flashlamp as soon and as long as the flashlamp is received on the camera. The arm is particularly adapted for use with flashcubes supporting a plurality of percussively ignitable flashlamps, each having a pre-energized striker wire, and is adapted to move into the cube to mechanically sense the operative or inoperative position of the striker wire and to position a warning signal such as a flag or other member in one of two positions indicative of such sensed striker position. To permit rotation of the cube, the arm includes a cam surface adapted to cooperate with the cube for temporarily camming the arm out of the cube upon cube rotation. The arm further has operative and inoperative positions, and mechanisms are provided for holding the arm in the inoperative position except when a flashlamp is positioned on the camera and for setting an exposure aperture for proper flash exposure when a flashlamp is positioned on the camera.

3,624,727

SOCKET FOR PERCUSSIVELY IGNITABLE MULTIPLE-LAMP FLASHBULB UNITS

William H. Horton, and Edward L. Sturm, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 2, 1969, Ser. No. 855,467
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 R **13 Claims**



The disclosure relates to the provision of a camera with a socket member for supporting a so-called flashcube or related multiple-flashbulb unit comprising a plurality of percussively ignitable flashbulbs, each of which is adapted to be fired in response to displacement of a corresponding percussion element within the flashbulb unit. The socket member can be rotatively indexed to transport each flashbulb to a predetermined firing position and includes a corresponding plurality of firing members which remain in alignment with the respective percussion elements and which are movable independently to effect displacement of those elements. An ignition member operated by the camera's shutter release mechanism is adapted to move the firing member associated with the flashbulb at the firing position, thereby causing that bulb to fire in predetermined synchronism with the opening of the camera shutter.

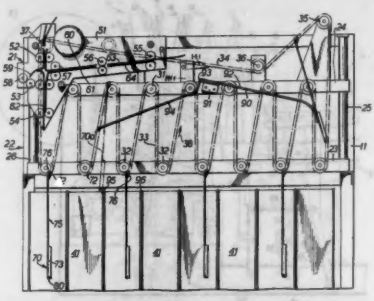
3,624,728

PHOTOGRAPHIC APPARATUS

Charles W. Clark, Kings Grove, Maidenhead, Berkshire, England

Filed Nov. 20, 1968, Ser. No. 777,324
Claims priority, application Great Britain, Nov. 20, 1967, 52,749/67
Int. Cl. G03b *17/50*
U.S. Cl. 95—14 **5 Claims**

Automatic development apparatus for dipping a sheet of exposed photosensitized sheet material successively into liquids contained in a number of process tanks by use of a carrier suspended from a conveyor which follows a sinuous or zigzag path. The apparatus includes control device whereby the exposed sheet is fed through rollers into a carrier, the carrier is moved by the conveyor to dip the sheet and



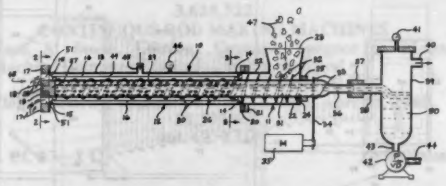
the developed sheet is withdrawn from the carrier by rollers and delivered from the apparatus.

3,624,729

CONTINUOUS JUICE EXTRACTOR

Maurice W. Hoover, 3620 Merwin Road, Raleigh, N.C.

Original application Jan. 29, 1968, Ser. No. 701,173, now Patent No. 3,550,526. Divided and this application Sept. 15, 1970, Ser. No. 072,281
Int. Cl. B30b *5/02*
U.S. Cl. 100—117 **4 Claims**



In abstract, a preferred embodiment of this invention is a continuous operation juice extractor using a perforated screw conveyor to move the pulp through the device. A flexible sleeve or bladder applies selectively either constant or varying pressures to the perforated screw conveyor to press the juice from the pulp. A vacuum may be applied to the hollow center portion of the perforated screw to assist in removing the juices therefrom as well as deaerate the same.

3,624,730

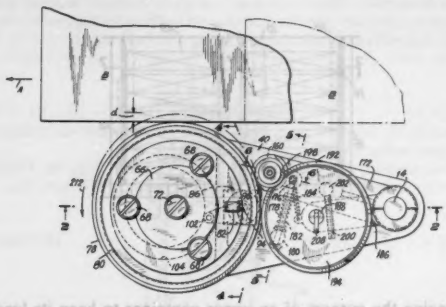
DEVICE FOR IMPRINTING SUCCESSIVE NUMBERS ON MOVING BOXES OR THE LIKE

Ira S. Gottscho, Milburn, N.J., assignor to Adolph Gottscho Inc., Union, N.J.

Filed Apr. 17, 1970, Ser. No. 29,595
Int. Cl. B41f *17/26*
U.S. Cl. 101—35 **13 Claims**

A device for imprinting symbols such as successive numbers on articles such as boxes as the latter travel along a given path. The device includes a support which carries a swingable base urged by a spring toward the path of movement of the articles. This base carries a rotary drive which is frictionally driven by the articles as the latter move along the path. This rotary drive carries the imprinting symbols which print identifying numbers or the like on the article during rotation of the rotary drive by the article itself. The imprinting device is adjusted from one number to the next automatically during rotation of the rotary drive in response to actuation of an adjusting member by a stationary cam with respect to which the rotary drive rotates. Also ink is transferred from an inking roll to the imprinting unit through a transfer roll

with the latter driven by frictional engagement with the rotary drive. Thus the entire device is driven solely from the

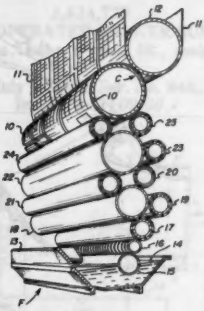


movement of the articles which are to be imprinted with the successive numbers or the like.

3,624,731
PRINTING APPARATUS AND PROCESS FOR CONTROLLING INK FOG

Eugene T. Lindberg, Denver, Colo., assignor to The Denver Post, Inc., Denver, Colo.

Filed July 16, 1969, Ser. No. 842,121
Int. Cl. B41f *31/06*
U.S. Cl. 101—350 **14 Claims**



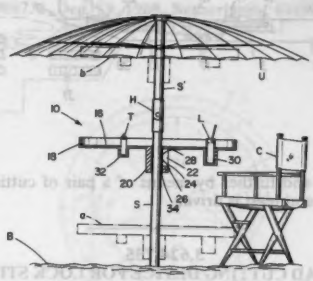
Ink fog is controlled or reduced by mixing with the ink finely divided particles of a magnetic material, such as iron oxide, and feeding the ink from the ink fountain to the impression cylinder by a series of rollers, at least some of which are magnetized, so as to attract ink-fog-containing magnetic particles. The magnetized rollers preferably include alternating north and south poles on the outside, as through the use of a series of magnetic rings having alternating poles on the outside, interspaced between unmagnetized discs, by electromagnetic coils wound to produce the alternating poles on spools formed of a core material, or by induced magnetism. In the latter instance, the outer layer of the roller may be formed of a magnetizable metal, or of rubber in which is embedded finely divided magnetic particles. The spacing of the permanent magnet discs may also be adjusted by sponge rubber discs interspaced therebetween.

3,624,732
BEACH UMBRELLA TABLE

Lloyd N. Bowden, 204 Headington Court, Timonium, Md.

Filed May 20, 1970, Ser. No. 38,925
Int. Cl. A47b *37/04*
U.S. Cl. 108—50 **4 Claims**

A quick-adjustment, self-protective beach umbrella tray with a central sleeve having special means for fitting umbrella shafts, including in various embodiments spring retention with and without cooperative thimble inserts. The table is

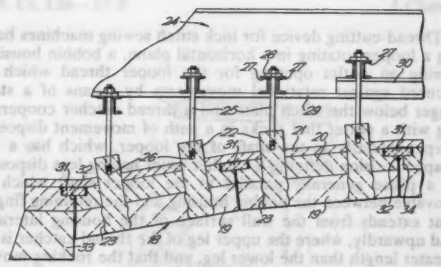


provided with recesses for receiving sundry articles and in one embodiment with stiffening ribs.

3,624,733
SUSPENDED ROOF FOR HIGH-TEMPERATURE INDUSTRIAL FURNACES

George Patrick Eadie, Linlighgow, and William Halliday, Balerno, both of Scotland, assignors to Laidlaw Drew and Company, Limited, Edinburgh, Scotland

Filed Mar. 11, 1970, Ser. No. 18,679
Claims priority, application Great Britain, Mar. 17, 1969, 13,857/69
Int. Cl. F23m *5/02*
U.S. Cl. 110—99 R **8 Claims**



A roof structure primarily for a regenerative glass furnace comprising a plurality of monolithic facing blocks suspended from a support structure via ceramic anchor tiles formed integral with said facing blocks, said facing blocks being backed up by high and low temperature layers of insulating material. Expansion gaps are provided between said facing blocks and these are closed by filler tiles positioned in one of said indulation layers.

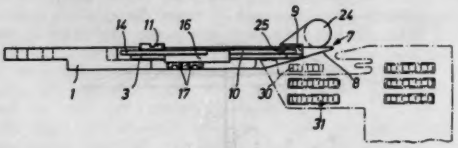
3,624,734
THREAD-CUTTING DEVICE ON SEWING MACHINES

Helmut Schips, Kirch str. 63a, 9400 Rorschach, Switzerland

Filed Mar. 27, 1970, Ser. No. 23,239
Claims priority, application Switzerland, Apr. 2, 1969, 5136/69
Int. Cl. D05b *65/06*
U.S. Cl. 112—252 **6 Claims**

A device for use in conjunction with sewing machines for cutting the thread between successive workpieces by means

of a suction tube which is arranged on the delivery side of the stitch-forming point and which determines the position of the



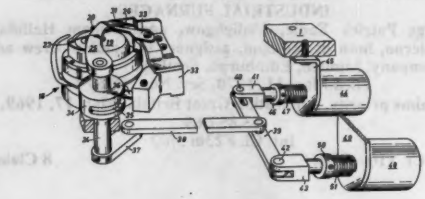
free thread and further by means of a pair of cutting blades of which one at least is driven.

3,624,735

THREAD CUTTING DEVICE FOR LOCK STITCH SEWING MACHINES

Kristen Hedegaard, Gentofte, Denmark, assignor to Firma G. M. Pfaff AG., Kaiserslautern am Pfalz, Germany

Filed Aug. 10, 1970, Ser. No. 62,575
Claims priority, application Germany, Aug. 16, 1969, P 19 41 794.8
Int. Cl. D05b *65/00*
U.S. Cl. 112—252 **3 Claims**



Thread-cutting device for lock stitch sewing machines having a looper rotating in a horizontal plane, a bobbin housing having an outlet opening for the looper thread which is secured against rotational movements by means of a stop finger below the stitch plate and a thread catcher cooperating with a cutter that rocks in a path of movement disposed perpendicularly to the shaft of the looper, which has a V-shaped incision defining a catcher point having legs disposed in a plane generally parallel to the looper shaft which is movable between the bobbin housing and the retaining finger that extends from the wall surface of the housing laterally and upwardly, where the upper leg of the thread catcher is of greater length than the lower leg, and that the rocking movement of the thread catcher for seizing the threads to be cut is moved by its drive arrangement in a manner that the point of the upper leg first moves between the looper thread outlet opening of the bobbin housing and the retaining finger above the surface of the looper thread outlet opening and upon seizing the looper thread below the surface of the bobbin housing surface.

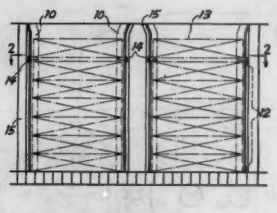
3,624,736

CONTAINER-SUPPORTING APPARATUS FOR CONTAINER SHIP

Akira Iwami, Tokyo, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Dec. 9, 1969, Ser. No. 883,654
Int. Cl. B63b *25/22*
U.S. Cl. 114—72 **3 Claims**

Apparatus is provided for use in conjunction with vertical container corner guideways in the hold of a containerized ship to enable the number of container stacked in the hold to be greater than would normally be permitted within safe compression limits of the bottommost container. The apparatus comprises support fingers pivotally mounted adjacent each guideway and selectively operable by means of an air cylinder between a retracted position for permitting loading of lower containers in the hold and an extended position for



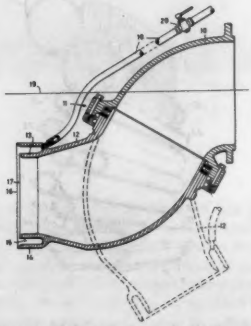
engaging the corners of an upper container to keep its load from being superimposed in the lower containers.

3,624,737

WATER-JET PROPULSION

Ainslie E. A. Keller, 37 Bourbond St., Indooroopilly, Brisbane, Queenland, Australia

Filed Dec. 15, 1969, Ser. No. 884,818
Claims priority, application Australia, Dec. 19, 1968, 48,106/68
Int. Cl. B63h *11/00, 11/02*
U.S. Cl. 115—12 R **2 Claims**



An underwater jet propulsion nozzle includes means for injecting air into the jet stream issuing from the nozzle, to give increased thrust when stationary or at low speeds. The nozzle is mounted for swiveling movement on a fixed jet pipe, and the plane of the swivel joint is inclined downwards in the direction of forward motion.

3,624,738

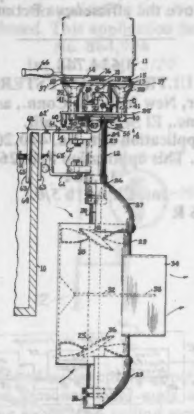
OUTBOARD MOTOR HAVING SEPARABLE POWER AND PROPULSION UNITS

Ferdinand Gill, 7849 North Keeler Ave., Skokie, Ill.

Filed Mar. 20, 1970, Ser. No. 21,290
Int. Cl. B63h *21/28*
U.S. Cl. 115—17 **10 Claims**

An outboard motor having a power unit including a driving shaft and a propulsion unit including a driven propeller shaft releasably coupled to the driving shaft for rotation therewith when the units are superimposed upon one another, the power unit having mounting studs extending from the bottom thereof and removably projected in socket-bearing posts on the propulsion unit and releasably latched therein by a

latching arrangement, thus to latch the units together in superimposed position one upon the other, with the shaft of the



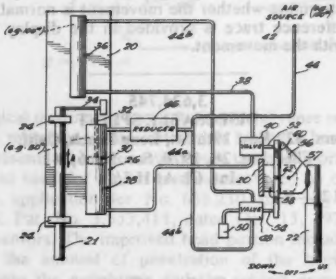
power unit coupled to the shaft of the propulsion unit for rotation about a vertical axis.

3,624,739

POWER-OPERATED MILKER SUPPORT

Chester A. Thomas, Lake Forest, Ill., assignor to Babson Bros. Co.

Filed July 9, 1969, Ser. No. 840,370
Int. Cl. A01j *09/08*
U.S. Cl. 119—14.1 14 Claims



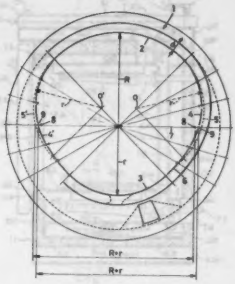
A power-operated adjustable support means for carrying a milking apparatus at any one of a plurality of vertically related positions during a milking operation. A combination pneumatic-hydraulic control means is provided for adjusting the support, the control means including a double-acting piston and cylinder device with pneumatic pressure admitted to the cylinder on one side of the piston at a constant pressure and with hydraulic pressure admitted to the cylinder on the opposite side of the piston at a varying pressure greater than, less than or the same as the constant pneumatic pressure to effect reciprocating movement of the piston to adjust the support or to hold the piston at a desired position to maintain a given position for the support.

3,624,740

ROTARY PISTON INTERNAL COMBUSTION ENGINE

Fredrik Jeremias Hogguer, Nieuw Loosdrechtsedijk 264, Netherlands

Filed May 1, 1970, Ser. No. 33,619
Claims priority, application Netherlands, May 2, 1969, 6906731, Dec. 19, 1969, Netherlands, 6919089
Int. Cl. F02b *53/06, 55/08*
U.S. Cl. 123—8.07 8 Claims



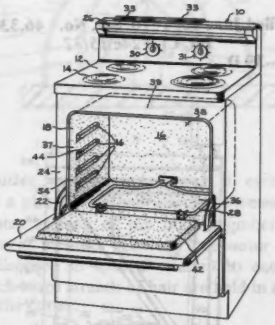
The rotary piston of an internal combustion engine has a geometrical configuration such that all lines through the axis of rotation of the piston are of equal length.

3,624,741

RACK SLIDING SURFACES FOR CATALYTIC COATED OVEN

Raymond L. Dills, Louisville, Ky., assignor to General Electric Company

Filed July 24, 1970, Ser. No. 58,040
Int. Cl. A21b *1/00*; F24c *15/16*
U.S. Cl. 126—19 R 5 Claims



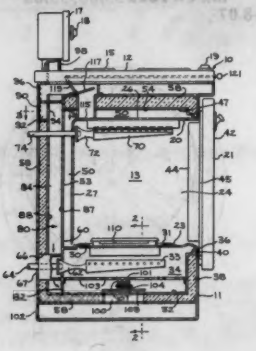
This invention pertains to a cooking oven having a boxlike oven liner and a front-opening access door. The oven liner has a plurality of vertically spaced embossments that serve as adjustable support means for one or more food supporting racks that are suspended between opposite sidewalls of the oven liner. The walls of the oven liner have a first corrosion resisting coating; and, except for the top surfaces of the embossments which engage the oven rack, a second coating of porcelain enamel including an oxidizing catalyst exposed on the surface thereof. Any food soils lodged on the second catalytic coating during normal cooking operations will be oxidized at oven temperatures above about 400° F.

3,624,742

SELF-CLEANING GAS OVEN WITH HEAT EXCHANGER

Bohdan Hurko, and James A. Dooley, both of Louisville, Ky., assignors to General Electric Company

Filed June 15, 1970, Ser. No. 46,113
Int. Cl. F24c *15/32*
U.S. Cl. 126—39 D **7 Claims**



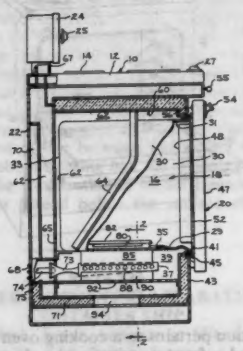
A heat exchanger system for a self-cleaning gas cooking oven where the oven is operated as a muffle oven for both baking and heat-cleaning operations. A heat exchanger is employed for cooling the flue gases as well as preheating the secondary air for the bake burner. There is an auxiliary secondary air supply for the bake burner, and it includes a normally open temperature-responsive damper means that serves to close the auxiliary air supply when the firebox temperature reaches a predetermined amount. This same auxiliary air supply is used when an upper broiler burner is operated during closed door broiling, and it cooperates with a normally closed oven vent that is opened for use during the broiling operation.

3,624,743

GAS-COOKING OVEN WITH OVEN SCAVENGING MEANS

Raymond L. Dills, Louisville, Ky., assignor to General Electric Company

Filed June 15, 1970, Ser. No. 46,338
Int. Cl. F24c *15/32*
U.S. Cl. 126—39 D **9 Claims**



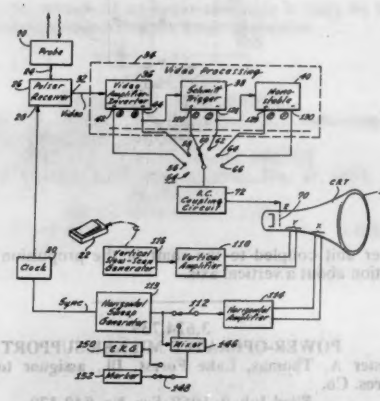
A scavenging system for a gas oven whereby smoke and odors generated during normal baking operations or during a pyrolytic self-cleaning operation are entrained in an airflow passing through the cooking cavity, and they exit through an exhaust vent in the bottom wall of the oven liner and enter the gas flames of the bake burner where they are oxidized, and the air is combined with the flue gases to heat the oven. Deflector means are present in the firebox above the bake burner to act as an aspirator and create a suction for creating the airflow through the oven cavity. Other deflectors are positioned beneath the burner in association with air inlets in the bottom of the firebox to create a second suction that draws room air into the firebox so as to pass them into the gas flames to improve the efficiency of combustion.

3,624,744

ULTRASONIC TESTER

Donald W. Munger, New Milford, Conn., assignor to Automation Industries Inc., El Segundo, Calif.

Continuation of application Ser. No. 440,205, Feb. 26, 1965, now abandoned. This application Feb. 26, 1970, Ser. No. 14,764
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 R **16 Claims**



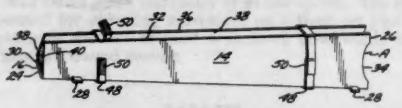
Herein described is improved means for ultrasonically inspecting a workpiece. An ultrasonic tester is disclosed herein which is particularly adapted for ultrasonically inspecting moving workpieces like living organs (for example, the mitral valve in the heart) and producing a visual display showing the movement of the living organ whereby the operator can readily determine whether the movement is normal. In addition, a reference trace is provided in the display for comparison with the movement.

3,624,745

DISPOSABLE SPLINT

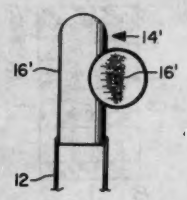
Don Bowers, 422 East 19th St., Long Beach, Calif.

Filed Jan. 28, 1970, Ser. No. 6,341
Int. Cl. A61f *5/04*
U.S. Cl. 128—93 **6 Claims**



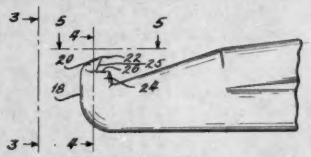
A disposable splint for the temporary support of the injured leg of an accident victim, which splint is formed from a heavy, bendable sheet material such as cardboard, or the like, that may be carried in a flattened condition to the scene of the accident, and by proper folding and expanding thereof, said support may be formed into a splint configuration to partially encircle the damaged leg. A flat, foldable extension is also provided for removably engaging the splint to provide temporary protection for the thigh of an accident victim.

3,624,746
CATAMENIAL TAMPON
Martin Grad, Cincinnati; Richard C. Miller, North College Hill, and Grace L. Smith, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation-in-part of application Ser. No. 768,425, Oct. 17, 1968, now abandoned. This application Sept. 17, 1969, Ser. No. 864,934
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 4 Claims



A highly compressed catamenial tampon, the side surfaces of which comprise loosened fiber ends and the method of producing the same by relative rolling motion of the tampon on a multiplicity of wirelike prongs which penetrate the tampon to a depth of from about one one-hundred twenty-eighth to about one-sixteenth inch.

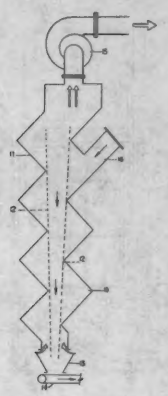
3,624,747
SURGICAL INSTRUMENT FOR RUPTURING MEMBRANES
Charles Allen McKnight, 2914 Painted Valley Drive, Little Rock, Ark., and Anita L. Gilbert, 4234 East Avalon Drive, Phoenix, Ariz.
Filed May 1, 1969, Ser. No. 820,882
Int. Cl. A61b *17/42*, *17/34*; B26b *29/00*
U.S. Cl. 128—361 12 Claims



A surgical instrument for rupturing membranes such as the amniotic membrane, said instrument having a head portion that represents an improvement over the head portion of an instrument used for similar purposes covered by copending U.S. Pat. application Ser. No. 656,210, filed July 26, 1967 now U.S. Pat. No. 3,533,411, dated Oct. 13, 1970 by the same inventors. The improved head portion includes means to limit the amount of penetration of the hook portion thereof into the membrane and the subject device is constructed to make it safer to use and to provide more controlled incision of the membrane. The subject instrument is a relatively simple inexpensive instrument preferably of one piece construction and is well suited for packaging in a sterile condition.

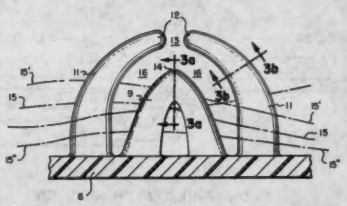
3,624,748
CIGARETTE MAKING
Mauritz L. Strydom, 75 Buile Kringiveg Dalseg, Stellenbosch, South Africa
Filed Dec. 12, 1968, Ser. No. 783,213
Claims priority, application South Africa, Dec. 18, 1967, 67/7564, May 22, 1968, 68/3288
Int. Cl. A24c *01/02*
U.S. Cl. 131—110 2 Claims

Shredded tobacco is carded by feeding it to a tower down which the tobacco gravitates against an airstream. The tower is formed of opposed walls of zigzag shape. The inner peaks of the zigzags touch planes that converge downwardly and



are spaced apart. Tobacco thus falls in countercurrent to an airstream with constantly decreasing velocity and passes successive areas of vortex flow as it gravitates down.

3,624,749
HAIR CURLERS
Laurent H. Girard, Bedford, N.H., and William A. Ribich, Lexington, Mass., assignors to American Velcro Inc., Manchester, N.H.
Filed Oct. 16, 1970, Ser. No. 81,269
Int. Cl. A45d *2/00*
U.S. Cl. 132—40 8 Claims

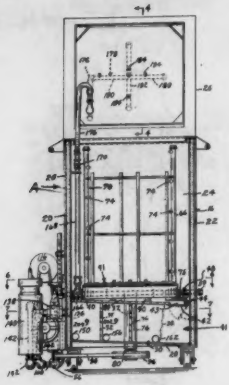


A hair curler is disclosed having a cylindrical body member and a plurality of hair-gripping elements projecting from the outer surface of the body member. Each hair-gripping element includes generally two outer arms and an inner loop disposed in spaced relation to each other and between which loops strands of hair are held in a wound condition about the curler.

3,624,750
PARTS WASHER
Thomas Peterson, Box 222, McKinley, Minn.
Filed Jan. 30, 1970, Ser. No.7,025
Int. Cl. B08b *3/02*
U.S. Cl. 134—96 6 Claims

An article-cleaning device comprising a housing open at the top and having a drainboard dividing the interior thereof into an upper cleaning chamber in which is disposed a revolvable article support and into a tank for cleaning liquid below the drainboard, a U-shaped manifold mounting spray nozzles within the cleaning chamber for spraying the cleaning liquid on the articles on the article support. The sprayed liquid is drained back into the tank through an opening in the

drainboard and recirculated by recirculating mechanism. Rinsing mechanism is provided for connecting the spraying manifold to a source of liquid under pressure, and handle



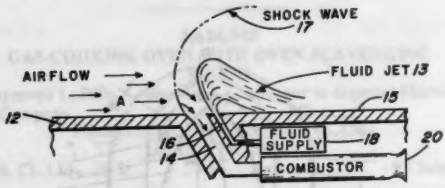
means for closing the opening in the drainboard together with a drain means for directing the rinsing liquid directly out of the cleaning chamber.

3,624,751

AERODYNAMIC AIR INLET FOR AIR-BREATHING PROPULSION SYSTEMS

Ronald F. Dettling, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 23, 1970, Ser. No. 31,099
Int. Cl. F15d *1/10*
U.S. Cl. 137—81.5 **4 Claims**



FLOW FIELD WITH JET ON

Means for effecting the induction of outside air into the combustion process of an air-breathing propulsion system such as ram jets, ducted rockets, and air-augmented rockets. A jet of fluid is exhausted at high velocity into the airstream just behind an open port in the skin of the vehicle. The injection of this fluid causes the formation of a shock wave some distance upstream of the point of injection. Air between this shock wave and the injection point is at a high pressure and thus flows into the open port in the skin of the vehicle. Thus, no external obstruction need be attached to the vehicle to divert air into the port.

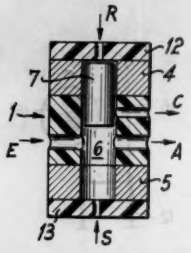
3,624,752

STORAGE UNITS FOR PNEUMATIC LOGIC SYSTEMS

Helmut Schmidt, Essen-Haarzopf, Germany, assignor to Bergwerksverband GmbH, Essen, Germany

Filed Dec. 12, 1969, Ser. No. 884,557
Claims priority, application Germany, Dec. 21, 1968, P 18 16 443.7
Int. Cl. F15c *3/00*; F16k *11/00*
U.S. Cl. 137—625.49 **14 Claims**

A storage unit for pneumatic logic systems, especially systems for control and adjustment purposes in underground mining, comprising a body of nonmagnetic material having a passage to receive a piston made of magnetizable material which can assume in the passage two terminal positions defined by permanent magnets, and which can be shifted



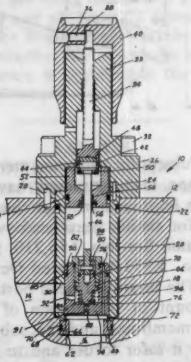
from one terminal position to the other under the influence of the signals for setting and resetting, the piston being formed as a blocking spool to control the inlet and outlets relating to the operative input and output signals, which have port in the passage.

3,624,753

TWO-STAGE OPENING VALVE

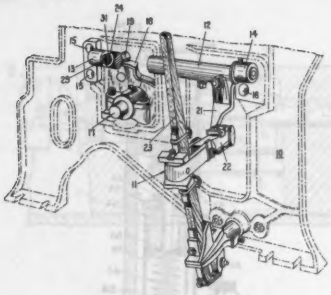
Richard S. Brumm, Orinda, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Apr. 27, 1970, Ser. No. 32,267
Int. Cl. F16k *1/02*
U.S. Cl. 137—630.14 **5 Claims**



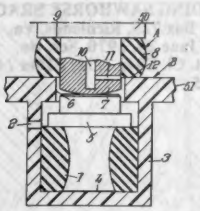
A two-stage opening globe valve including the main valve member with a chamber therein receiving the valve stem to permit limited relative axial movement between them. Coaxial and lateral primer ducts connect the chamber to the upstream and downstream flow passages, and on the end of the stem is a primer valve that opens and closes the coaxial duct. When the stem is moved to open the valve it opens the primer valve first while an imbalance in opposing areas of the main valve closure which are exposed to upstream pressure produces a force differential biasing the valve toward closed position.

3,624,754
LOOM-PICKING DEVICE
Umberto V. Tosti, Milford, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Feb. 17, 1970, Ser. No. 12,001
Int. Cl. D03d 49/24
U.S. Cl. 139—142 2 Claims



A picking device for a loom comprising a pick ball supporting stud and a cooperating locking element therefor for fixedly attaching it to and releasing it for disassembly from the loom's pickshaft.

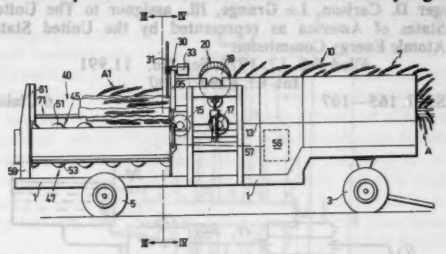
3,624,755
CONNECTING DEVICES FOR THE FLUIDTIGHT FLOW OF FLUID BETWEEN TWO ENCLOSURES
Jacques Lambert, Paris, France, assignor to Flaminaire Marcel Quercia, Paris, France
Filed Feb. 3, 1970, Ser. No. 8,185
Claims priority, application France, Feb. 7, 1969, 69 02966
Int. Cl. B65b 1/04, 3/04
U.S. Cl. 141—293 10 Claims



The connecting device is constituted of two parts each of which is adapted to communicate with a respective enclosure. When the two parts are urged together a fluidtight passage between the two enclosures is opened. One part is a male part and includes a cylindrical tip containing a duct connected to the enclosure and opened also on the cylindrical portion of the tip between its end and an axial shoulder. An elastic sleeve is threaded on the tip, supported on the shoulder and masks the outlet with the duct in fluidtight manner. The other part, the female part, has a junction zone communicating with the other enclosure through an orifice of greater diameter than the cylindrical tip and less than the outer diameter of the elastic sleeve. When the two parts are urged together the elastic sleeve seals against the junction zone.

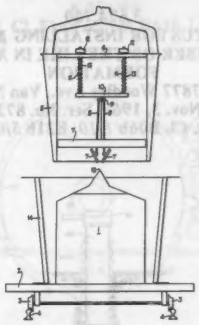
3,624,756
APPARATUS FOR TREATING FELLED TREES
Per Gustaf Mellgren, Soderhamn, Sweden, assignor to Kockum Soderhamn Aktiebolag, Soderham, Sweden
Filed Oct. 27, 1969, Ser. No. 869,810
Claims priority, application Sweden, Nov. 13, 1968, 15401/68
Int. Cl. A01g 23/02
U.S. Cl. 144—2 Z 9 Claims

An apparatus for simultaneously treating a bunched group of undelimbed felled trees comprising in combination an elongated bin into which the bunched group of undelimbed trees is deposited and caused to crowd more closely together



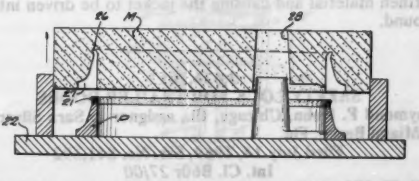
as they move in a downward direction and feeding means for feeding the bunched group out of said bin, said feeding means including a vertically movable upper roll.

3,624,757
METHOD OF LINING INGOT MOLD HEAD BOXES
Roger Fieldhouse, and Kenneth Thomas Eccleston, both of Nechells, Birmingham, England, assignors to Foseco Trading A. G., Langenjohnstrasse, Switzerland
Filed Sept. 5, 1969, Ser. No. 864,921
Claims priority, application Great Britain, Sept. 5, 1968, 42,224/68
Int. Cl. B22c 9/12
U.S. Cl. 164—33 2 Claims



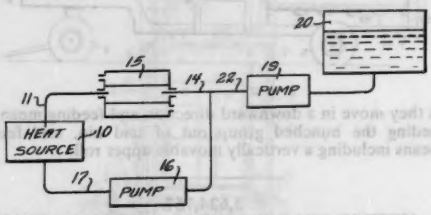
Ingot mold head boxes may be lined by inserting a first former therein, to leave an annular gap between itself and the head box, placing hot-topping composition in the gap, and by passing a second former into the gap, and thereby squeezing the hot-topping material onto and against the head-box walls. The two formers are then removed.

3,624,758
METHOD OF MAKING A SAND MOLD WITH A BACK DRAFT
George V. Harris, Racine, Wis., assignor to Caterpillar Tractor Co., Peoria, Ill.
Original application July 12, 1968, Ser. No. 744,484, now Patent No. 3,552,480. Divided and this application May 13, 1970, Ser. No. 36,869
Int. Cl. B22c 9/00
U.S. Cl. 164—44 9 Claims



A method of making a sand mold of the heat-cured type by using a composite metal and flexible material pattern. An improved product made from such a method.

3,624,759
CLOSED FLUID SYSTEM PRESSURIZATION
Roger D. Carlson, La Grange, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Feb. 17, 1970, Ser. No. 11,991
Int. Cl. F28d 15/00
U.S. Cl. 165—107 6 Claims



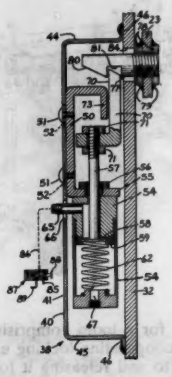
A closed fluid system is pressurized by using a fluid pump instead of a cover gas. In nuclear reactor closed fluid systems where the fluid is a liquid metal, electromagnetic pumps can be used. In addition, an electromagnetic pump which develops a high pressure gradient within the pump while maintaining the inlet and outlet pressures substantially equal can be used to separate gases from the fluid.

3,624,760
SONIC APPARATUS FOR INSTALLING A PILE JACKET, CASING MEMBER OR THE LIKE IN AN EARTHEN FORMATION
Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.
Filed Nov. 3, 1969, Ser. No. 873,298
Int. Cl. B06b 1/10; E21b 5/00
U.S. Cl. 175—56 6 Claims

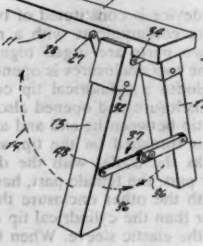
A jacket member is placed over a bar which forms a mandrel and is acoustically coupled thereto by means of adjustable couplers at a plurality of points therealong. A sonic oscillator of the orbiting mass type is coupled to the mandrel and driven at a frequency such as to set up resonant standing-wave vibration of the mandrel. Sonic energy is thus coupled to the jacket and in turn into the earthen formation into which the jacket is to be installed, thereby fluidizing the earthen material and causing the jacket to be driven into the ground.

3,624,761
SAFETY LOCK FOR TRAILER DOORS
Raymond F. Kohn, Chicago, Ill., assignor to Sara Silverman, Miami Beach, Fla.
Filed July 14, 1969, Ser. No. 841,392
Int. Cl. B60r 27/00
U.S. Cl. 180—112 2 Claims

A lock for the door of a trailer to inhibit pilfering from an unattended trailer as when a trailer is in "piggy-back" transit by rail or when it is in a yard unattended by a tractor operator, or without an attached tractor. The lock is spring-actuated to its closed position and pneumatically actuated to its open position by air pressure received through the coupling between the tractor and the trailer. The pneumatic unit is substantially completely contained within a housing that is located within the channel of the rear crossmember that supports the trailer.

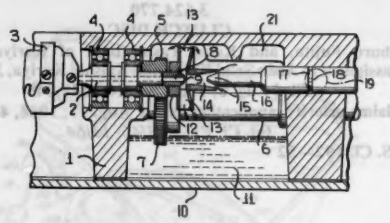


3,624,762
FOLDING SAWHORSE BRACKETS
John L. Hankins, Box 725, Richlands, Va.
Filed June 29, 1970, Ser. No. 50,389
Int. Cl. E04g 1/32; F16m 11/00
U.S. Cl. 182—155 2 Claims



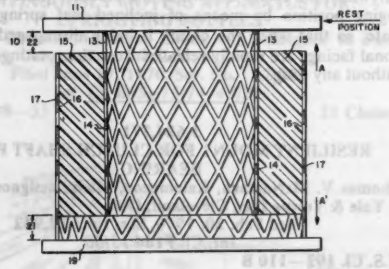
A plurality of fixtures for securely holding together wooden beams in the form of a sawhorse, the fitting including for each sawhorse a pair of main brackets one of which is secured pivotally beneath each opposite end of the sawhorse backbone beam, a cap bracket for fitting over the upper end of each of the four sawhorse legs, and a pair of expander brace units, one set of each being secured to each of the pair of sawhorse legs.

3,624,763
LOOP TAKER LUBRICATION SYSTEM
Gunter Rohr, Stuttgart-Kaltental, Germany, assignor to Union Special Maschinenfabrik GmbH, Stuttgart, Germany
Filed Jan. 6, 1970, Ser. No. 1,000
Claims priority, application Germany, Jan. 16, 1969, P 19 02 000.9
Int. Cl. D05b 71/02
U.S. Cl. 184—6.15 9 Claims



Apparatus for lubricating a loop taker raceway in a sewing machine wherein a current of air forces an oil mist through a hollow loop taker shaft and deflects the air laterally at the inlet port of the shaft.

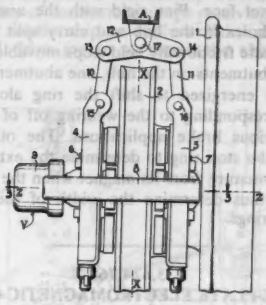
3,624,764
VIBRATION ISOLATION MOUNT AND SHOCK ABSORBER
Kenneth W. Goben, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Navy
Filed May 13, 1970, Ser. No. 36,722
Int. Cl. F16f 7/12
U.S. Cl. 188—1 C 2 Claims



An elastomer vibration or sound attenuating material isolates two elastic-plastic spring shock absorbers. Expected operational sound or vibrational loads are essentially absorbed by the elastomer and for these loads the device acts as a low-frequency isolation mount. For mechanical shock forces beyond limits of sound or vibration the elastic-plastic springs responsively deform thereby absorbing and attenuating the shock force transmitted through it.

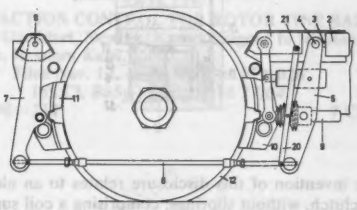
3,624,765
DISC BRAKE
Jean-Marc Laurent Hauth, Pont-a-Mousson, France, assignor to Centre de Recherches de Pont-a-Mousson, Pont-a-Mousson, France
Filed Jan. 2, 1970, Ser. No. 152
Claims priority, application France, Jan. 27, 1969, 6901503
Int. Cl. F16d 55/224; B61h 5/00
U.S. Cl. 188—72.6 5 Claims

A disc brake for a vehicle wheel. The brake pad carriers are disposed on each side of the plane of the disc. Two links are respectively pivoted to the carriers and disposed on each side of the plane of the disc. The links are pivoted at their upper ends to a compensating member which is pivoted to the chassis. The carriers are interconnected by a rigid yoke



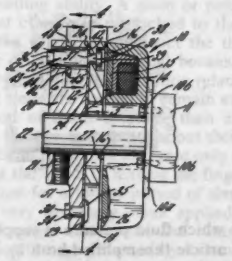
which carries an actuator for shifting the brake pad carriers toward the disc.

3,624,766
RAILWAY VEHICLE WHEEL BRAKE RIGGING
Nils Borje Lennart Sander, Malmo, Sweden, assignor to Svenska Aktiebolaget Bromsregulator, Malmo, Sweden
Filed Feb. 4, 1970, Ser. No. 8,609
Claims priority, application Great Britain, Feb. 14, 1969, 8,051/69
Int. Cl. F16d 65/66; B61h 15/00
U.S. Cl. 188—202 4 Claims



A railroad automatic-adjusting braking system is disclosed with a dead and live lever arrangement wherein a slack adjusting unit is located in the linkage between the brake shoe and one of the brake levers.

3,624,767
SELF-ADJUSTING CLUTCH OR BRAKE
Edward R. Kroeger, Beloit, Wis., assignor to Warner Electric Brake & Clutch Company, Beloit, Wis.
Filed Aug. 5, 1970, Ser. No. 61,193
Int. Cl. F16d 13/75, 65/52
U.S. Cl. 192—18 B 14 Claims



The armature ring of a magnetic friction brake or clutch is supported on a rotary hub through the medium of a plurality

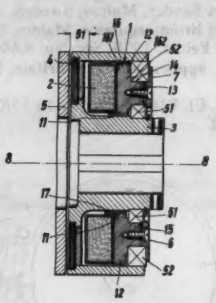
of angularly spaced leaf springs extending along secants of the armature, riveted at opposite ends to the armature and hub, and stressed to bias the armature axially away from its coating magnet face. Pins rigid with the armature project loosely into holes in the hub and carry split resilient rings which constitute frictionally held stops movable between axially spaced abutments on the hub, one abutment acting when the brake is energized to shift the ring along the pin a distance corresponding to the wearing off of the armature face in previous brake applications. The other abutment coacts with the stop ring to determine the extent of separation of the armature from its magnet when the latter is deactivated and thus determine the width of the idle air gap between the rings.

3,624,768

SINGLE-PLATE ELECTROMAGNETIC CLUTCH

Werner Nussli, Gams Saint Gall, Switzerland

Filed Mar. 3, 1970, Ser. No. 15,974
Claims priority, application Austria, Mar. 4, 1969, A 2110/69
Int. Cl. F16d *27/10*
U.S. Cl. 192—84 C **6 Claims**



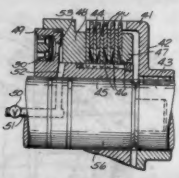
The invention of this disclosure relates to an electromagnetic clutch, without sliprings, comprising a coil support unit an armature plate movable relative to the coil support unit and a hub unit, preferably carrying a friction lining for the armature plate, in which the coil support unit has an inner and outer periphery formed with seatings for support bearings.

3,624,769

PRESSURE VENTING CONTROL

Quinten A. Hansen, Franksville, Wis., assignor to Eaton, Yale & Towne Inc., Cleveland, Ohio

Filed Apr. 20, 1970, Ser. No. 30,042
Int. Cl. F16d *25/063*; **F16k** *15/14*
U.S. Cl. 192—85 AA **12 Claims**



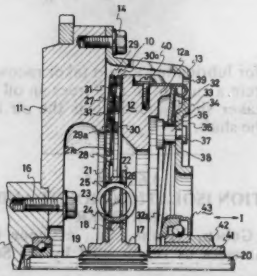
A ram to which fluid pressure is supplied for actuation of any desired article (exemplified both by a Reeves pulley rate changer and by a disk clutch) is automatically vented when fluid is no longer supplied, thereby allowing the actuated article promptly to resume its initial position. The vent controlling valve includes a centrally apertured resilient disk which normally assumes a position in which its central aperture is spaced from a seat which the central portion of the disk engages when under pressure. Vent ducts radially offset from the opening in the valve disk discharge fluid when the disk is not subject to substantial pressure. However, when the ram is actuated the differential pressure across the disk causes the disk to engage the seat, thus substantially terminating fluid discharge by closing either or both of the discharge ducts.

3,624,770

CLUTCH DISC

Saburo Fujita, and Keizo Yasui, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 6, 1969, Ser. No. 848,045
Claims priority, application Japan, Aug. 11, 1968, 43/56833
Int. Cl. F16d *13/46, 13/64*
U.S. Cl. 192—52 **3 Claims**



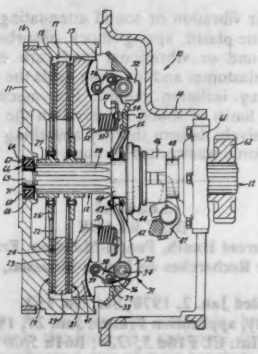
A clutch disc for use on an automotive vehicle, wherein a pair of friction facings provided between a pressure plate and a flywheel are inclined towards the pressure plate in a disengaging position by means of inclined leaf springs or disc plate, so that when the clutch is being disengaged the frictional facings are rapidly released from the rotating members without any drag.

3,624,771

RESILIENT MOUNT FOR CLUTCH SHAFT PILOT BEARING

Thomas V. McNamara, Kalamazoo, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Feb. 20, 1970, Ser. No. 12,942
Int. Cl. F16d *13/60*
U.S. Cl. 192—110 B **7 Claims**



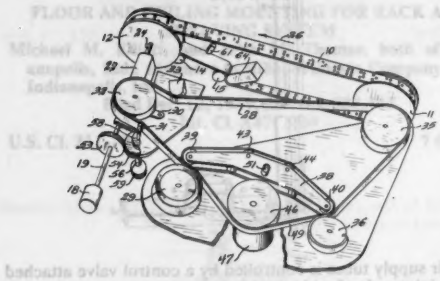
A flywheel and clutch assembly for drivingly connecting an engine to a transmission, and having a resilient mounting for supporting the forward end of the transmission input shaft within the flywheel for accommodating both angular and radial misalignment between the flywheel and the transmission.

3,624,772

READING AND WRITING MACHINE USING RAISED PATTERNS

Arnold P. Grunwald, Chicago, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 7, 1969, Ser. No. 874,734
Int. Cl. B41j 3/32; G09b 21/00
U.S. Cl. 197—6.1 6 Claims



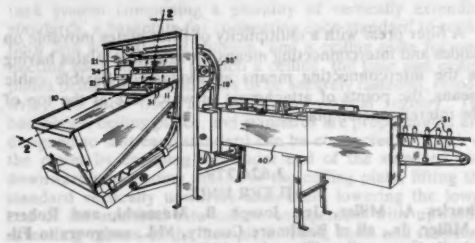
A reading and writing machine which uses raised patterns to convey information includes a reading belt upon which the patterns are formed and a tape which stores the information. The tape is divided into a plurality of different information portions which the machine can selectively read. Provision is made for writing on selected portions of the tape on blank tape. A simple tape drive mechanism is provided which prevents slack in the tape yet does not require a variable speed drive. The reading belt is formed of plastic with bubbles having two stable positions molded therein.

3,624,773

CONTINUOUSLY MOVING APPARATUS FOR UPRIGHTING BOTTLES

Robert J. Krooss, Mountain Lakes, N.J., assignor to Pace Packaging Corporation, Fairfield, N.J.

Filed June 17, 1970, Ser. No. 47,513
Int. Cl. B65g 15/14, 47/24
U.S. Cl. 198—33 21 Claims



Bottles in a hopper are picked by a flight bar conveyor and delivered between a pair of conveyor belts spaced apart to grip the bottles and convey them past orienting fixtures which erect the bottles while held between the belts. The flight bars are cantilevered and pass laterally between the conveyor belts to deliver bottles in a generally horizontal position, and the tops of the belts are spaced apart to form a V-shaped opening of decreasing size where the flight bars pass between the belts.

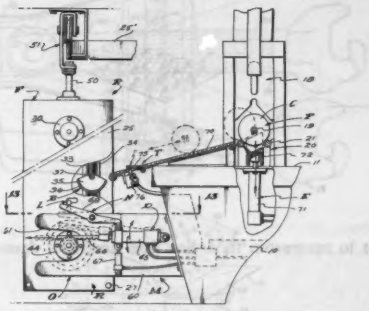
3,624,774

SAUSAGE SMOKING APPARATUS

James W. Marietta, Jr., c/o D-Mar Co., 1116 West 24th St., Los Angeles, Calif.

Filed Feb. 12, 1970, Ser. No. 10,892
Int. Cl. B65g 17/16
U.S. Cl. 198—158 8 Claims

A means and apparatus for handling sausages from a sausage-stuffing station and throughout a cooking period; said means and apparatus including an inclined ramp at said station and down which sausages roll, a wheeled truck-supported rack in cooperative relationship with the ramp and having a plurality of horizontal sausage-receiving baskets carried in spaced relationship on endless chains and automatically operated drive means to rotate the chain-supported



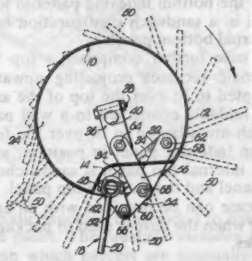
baskets to move each basket from sausage-receiving relationship with the ramp each time a sausage is deposited into a basket and to move the next adjacent basket into sausage-receiving relationship with the ramp. The rack is movable from said station and ramp and into a cooking area to cook the sausages in the baskets.

3,624,775

KNEE ACTION CONTROL FOR ROTOR TINE BARS

Melvin V. Gaeddert, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed Nov. 12, 1969, Ser. No. 876,028
Int. Cl. B65g 29/00; A01d 77/04
U.S. Cl. 198—211 7 Claims



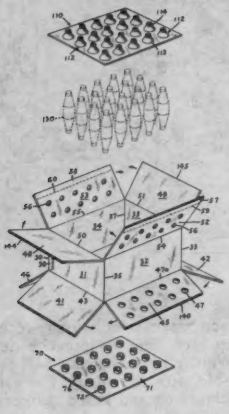
Knee action linkage is provided to control the tine bars or shafts for rotating cylinders, drums or the like. The linkage simulates the control action of a cam and is designed to control the tine bars so as to maintain a desired position for maximum pickup and feeding ability. A main or primary link is actuated by an offset crank arm. Attached to the main link are two follower links which interconnect the tine bar and the drum. When the drum is rotated, and because the crank arm is held stationary, a unique tine position relative to drum rotation occurs. The tines are caused to remain extended for a considerable period of drum rotation; then at a certain point in the rotation the tine bars rotate about their axes very abruptly, while the drum continues to rotate only a relatively few degrees. This has the effect of leaving the fingers or tines in an extended position for a longer period of time, which is most desirable and very necessary when applied to pickup reels, feeder beaters, auger conveyors, and rotary windrow pickups. The simplified linkage actuated by a crank arm on a fixed axle eliminates the need for a cam track and cam follower bearings which require lubrication and are very noisy in operation, yet function and finger action are duplicated as when controlled by a cam.

3,624,776

CASE FOR SHIPPING ARTICLES IN AN UPRIGHT POSITION AND IN SPACED LATERAL SEPARATION

Robert Louis Gordon, Monroe, N.Y., assignor to International Paper Company, New York, N.Y.

Filed May 12, 1970, Ser. No. 36,554
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 Y 26 Claims



A case is provided for shipping one or more articles in a substantially upright position and in spaced lateral separation from adjoining articles and portions of said case; the case comprises wall panels, an external bottom panel, a bottom indexing panel for supporting and engaging the bottom of the article by means of one or more projections rising upwardly therefrom, an internal bottom panel foldably connected to a wall panel which contains apertures adapted to fit over the projections on the bottom indexing panel to lock the bottom indexing panel in a sandwich configuration between the external and internal bottom panels.

The shipping case further comprises a top indexing panel containing female recesses projecting upwardly therefrom which are adapted to fit over the top of the article, an internal top panel foldably connected to a wall panel containing apertures which are adapted to fit over the female recesses, to lock the top indexing panel in position, and an external top panel; the internal top panel is sandwiched between the top indexing panel and the external top panel.

The shipping case can be provided with an article separator layer assembly when the case is used to package a plurality of layers of articles.

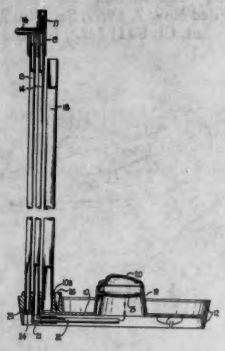
3,624,777

FISH TANK FILTER

William James Gardner, 472 Oldham Road, Miles Platting, Manchester M10, 7JA Lancashire, England

Filed Mar. 20, 1970, Ser. No. 21,459
Claims priority, application Great Britain, Mar. 20, 1969, 14,621/69
Int. Cl. B03d *1/14*
U.S. Cl. 210—169 13 Claims

A fish tank filter having a perforated base which is arranged to seat spaced from the bottom of a fish tank, there being two air supply tubes and one tube for delivering a stream of air and water upwardly, one air supply tube together with said latter tube serving to cause a syphonic effect in the water in said tank so that foreign matter in the water is filtered through gravel or like permeable material placed on said base, the other of said air supply tubes being arranged to deliver a supply of air to a position beneath a hinged lid so that when an amount of air has collected in an air collection chamber beneath said hinged lid, the lid is lifted to allow a relatively large bubble of air to rise up through the water. The ratio of air pressures supplied to the



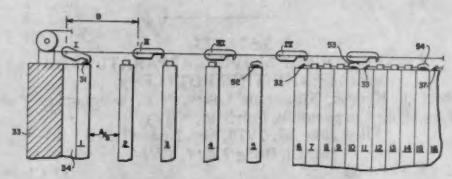
two air supply tubes is controlled by a control valve attached to the inlet ends of said tubes.

3,624,778

FILTER PRESS

Josef Weber, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed May 26, 1970, Ser. No. 40,507
Int. Cl. B01d *25/00*
U.S. Cl. 210—230 7 Claims



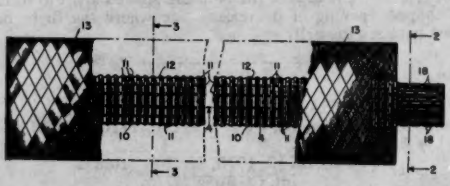
A filter press with a multiplicity of filter plates movable on guides and interconnecting means for said filter plates having as the interconnecting means an elongated, flexible cable means, the points of attachment of which are at the top of the interconnected plates.

3,624,779

FILTER UNIT

Charles A. Miller, Jr.; Joseph B. Masaschi, and Robert Miller, Jr., all of Baltimore County, Md., assignors to Filterite Corporation, Timonium, Md.

Continuation of application Ser. No. 743,485, July 9, 1968, now abandoned. This application Mar. 9, 1970, Ser. No. 17,973
Int. Cl. B01d *23/06*
U.S. Cl. 210—457 1 Claim



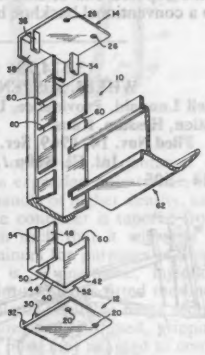
A fluid filter unit having a rigid perforated core and a filter covering extending over a substantial area thereof, the core

having a projecting end portion adapted to fit into a supporting means, or ferrule mounted in a header in a filter housing or casing, in which the header is provided with one or more openings therethrough, the projecting end portion of the core being made adaptable to the diameter of the supporting means associated with the said header openings, which vary in diameter by rendering the projecting end portion of the core compressible by corrugating, slotting, or otherwise equivalently fashioning the same to accomplish this result.

3,624,780
FLOOR AND CEILING MOUNTING FOR RACK AND SHELVING SYSTEM

Michael M. Elliott, and John M. Thomas, both of Indianapolis, Ind., assignors to Elliot-Williams Company, Inc., Indianapolis, Ind.

Filed Dec. 12, 1969, Ser. No. 884,493
Int. Cl. A47f 5/00
U.S. Cl. 211—86 **7 Claims**



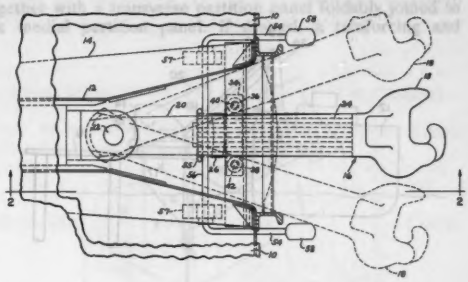
For use in a storage space providing a floor and a ceiling, a rack system comprising a plurality of vertically extending standards, a baseplate for connecting each standard to such a floor and supporting it thereon, and a ceiling plate for connecting each standard to such a ceiling, the base and ceiling plates being provided in pairs to be securely fastened, respectively, to such floor and ceiling in vertical registry. The baseplates, ceiling plates, and standards are proportioned and designed so that each standard can be connected to a pair of the plates by engaging the upper end of the standard with downwardly extending means of the ceiling plate, lifting the standard vertically upwardly and, then, lowering the lower end of the standard into secure engagement with upwardly extending means of the baseplate. Thus, tools and fastening elements are not required to assemble and disassemble the rack system of the present invention.

3,624,781
TORSIONAL RAILWAY CAR COUPLER CENTERING DEVICE

Robert W. Randolph, St. Charles, and Charles E. Reedy, Bridgeton, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Jan. 20, 1970, Ser. No. 4,298
Int. Cl. B61g 7/12
U.S. Cl. 213—20 **9 Claims**

A coupler-centering devices includes a rack on the bottom of the coupler shank having longitudinal gear teeth so that lateral movement of the coupler causes rotation of a gear segment. The gear segment is adjustably spring mounted and is connected to a torsion rod through a hand-operated clutch. The torsion rod extends parallel to the centerline of the car immediately below the coupler shank, and its inner end is fixed to the car. Alternatively, the rod may serve as a shaft to turn a torsional rubber shear structure. The teeth of the rack

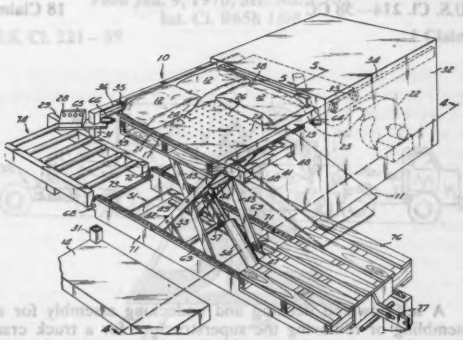


are long enough to permit buff and draft movement of the coupler.

3,624,782
SEMIAUTOMATIC PALLETIZER

Orlin A. McPeek, Whittier, and Arnold B. Nordstrom, La Habra, both of Calif., assignors to Aircraft Mechanics, Inc., Colorado Springs, Colo.

Filed Apr. 14, 1969, Ser. No. 815,891
Int. Cl. B65g 57/24
U.S. Cl. 214—6 P **4 Claims**



A semiautomatic machine is provided to load parcels layer by layer onto a pallet. The machine includes an elevated arranging table on which parcels are manually arranged into desired patterns. After a layer has been assembled, the table may be retracted to drop the layer onto a pallet or preceding layer. An elevator is provided to support the pallet or preceding layer at a level immediately below the arranging table. When the desired number of layers are accumulated, the pallet is discharged and a new one is automatically supplied. The upper surface of the arranging table is perforated to permit the flow of pressurized air therethrough to support the weight of the parcels thereon to minimize sliding friction and, therefore, manual effort.

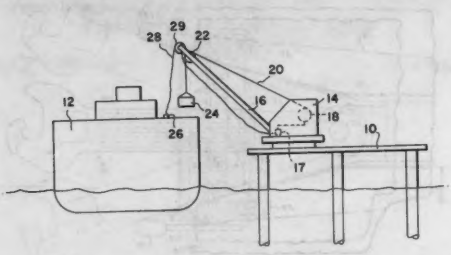
3,624,783
MOTION CONTROL SYSTEM

Nuke Ming Chang, San Francisco, Calif., assignor to Santa Fe International Corporation, Los Angeles, Calif.

Filed June 12, 1970, Ser. No. 45,719
Int. Cl. B65g 47/00
U.S. Cl. 214—16 R **20 Claims**

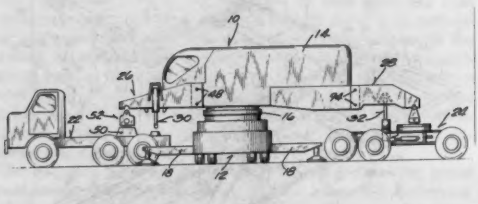
Disclosed is an open loop control for maintaining constant tension in a cable connecting two bodies. Among the applications of the system are transfer of a load between a pier and a vessel or between two vessels, maintaining constant tension

in a cable between two vessels, barge towing, underwater pipelaying, etc. The system includes a motion sensor, and a motion-compensator subsystem to generate a control signal in synchronism with the motion being sensed but at a fixed



phase offset in relation thereto. The control signal operates a motor or the like at a fixed speed forward or reverse to compensate for the sensed motion with the phase offset compensating for the reversal time lag between full speed in opposite directions present in the motor system.

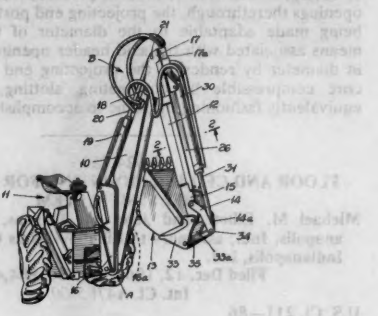
3,624,784
DECKING AND UNDECKING APPARATUS FOR A TRUCK CRANE
Thomas M. Larson, Milwaukee, Wis., and Melvin E. Putnam, Escanaba, Mich., assignors to Harnischfeger Corporation, West Milwaukee, Wis.
Filed June 30, 1970, Ser. No. 51,126
Int. Cl. B65g 67/02
U.S. Cl. 214—38 CC **18 Claims**



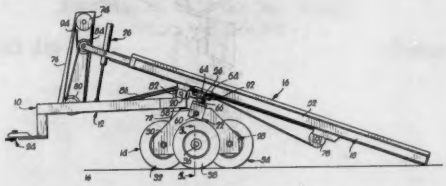
A self-powered decking and undecking assembly for assembling or removing the superstructure for a truck crane from the carrier, said assembly including a tractor having a front strut and a trailer having a rear strut, the front and rear struts being adapted to be connected to the superstructure. The front strut includes a fifth wheel kingpin adapter for connection to the tractor and a first pair of vertical hydraulic piston and cylinder assemblies for raising the front strut relative to the tractor. The rear strut is connected to a rotatable strut mount provided on the trailer which includes a second pair of vertical hydraulic piston and cylinder assemblies for raising the rear strut relative to the trailer. The vertical hydraulic piston and cylinder assemblies are pivotally mounted on their respective supports and are pivoted by a third pair of hydraulic piston and cylinder assemblies for adjusting the lateral position of the superstructure with respect to the carrier. The trailer includes rear steering wheels which can be placed in a caster mode of operation.

3,624,785
EXTENDABLE DIPPER-STICK
Morton A. Wilson, 6956 Wystone Ave., Reseda, Calif.
Filed Dec. 7, 1970, Ser. No. 95,582
Int. Cl. E02f 5/22
U.S. Cl. 214—138 **6 Claims**

An extendable dipper-stick adapted to be attached to ordinary backhoe equipment, which dipper-stick includes an extension member slidingly received within an outer, hollow, elongated support bar, with the said member thereof being extended or retracted relative to said support bar by hydraulic means contained within said support bar; and means attached to the exposed end of said member so as to connect said end to a conventional backhoe bucket.

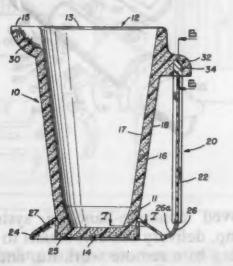


3,624,786
WHEEL SUSPENSION
Ezra Cordell Lundahl, Providence, Utah, assignor to Hesston Corporation, Hesston, Kans.
Filed Nov. 14, 1969, Ser. No. 876,943
Int. Cl. B60p 1/28
U.S. Cl. 214—505 **4 Claims**



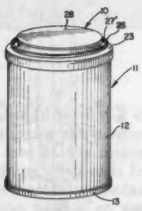
tions being characterized by socket members mounted on the end thereof to allow the assembly of a rigid elongated utensil. Said utensil portions further providing rigidity to the receptacle and improving the sealing of the closure member on the receptacle.

3,624,788
DISPOSABLE LIQUID SERVING SYSTEM
Martin J. McMahon, 6 Rolling Ridge Road, Windham, N.H., and Sidney Z. Smith, 583 Chandler St., Worcester, Mass.
Filed Jan. 15, 1970, Ser. No. 3,128
Int. Cl. B65d *25/28*
U.S. Cl. 220—94 R **8 Claims**



A disposable carafe comprises a container of cellular plastic material, such as expanded polystyrene, in combination with a detachable handle of higher density, easily moldable plastic material. The container is tapered from an open top to a closed bottom such that it will nest with other similarly designed containers for purposes of storing and/or shipping. The handle is a one-piece, injection molded member having a base into which is fitted the bottom of the container. A thin, flexible or bendable hinge section extends from the base to an elongated, stiffened, gripping portion. The end of the gripping portion is adapted to connect with a lug which extends from the container near the top thereof.

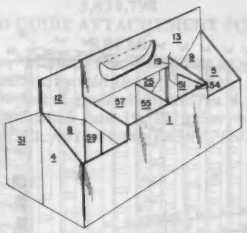
3,624,789
CONTAINER STACKING AND SEALING OVERCAP
Harry A. Peyser, Olympia Fields, and Sally J. Stevenson, Crestwood, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 2, 1970, Ser. No. 7,719
Int. Cl. B65d *21/02, 41/18*
U.S. Cl. 220—97 B **3 Claims**



An overcap for container having a stacking flange for retaining stacked containers in alignment and a sealing flange insertable into the opened end of the container for sealing the opening.

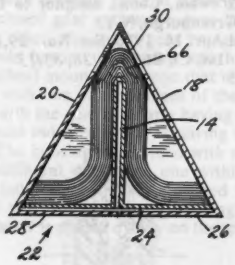
3,624,790
ARTICLE CARRIER
James T. Stout, Doraville, Ga., assignor to The Mead Corporation
Filed July 6, 1970, Ser. No. 52,370
Int. Cl. B65d *75/00*
U.S. Cl. 220—113 **7 Claims**

An article carrier having bottom and sidewalls and end wall panels foldably joined together in conventional fashion and provided with medial handle structure is arranged with partition structure on each side of the handle, the partition structures each including a medial panel secured to an auxiliary panel struck from the handle and folded downwardly together with a transverse partition panel foldably joined to the medial partition panel. If desired, a reinforcing and



anchoring panel may be foldably joined to the transverse partition panel and secured to the sidewall and anchoring flaps foldably secured to edges of the medial partition panel and to the reinforcing and anchoring panel may be secured to transverse partition straps foldably joined both to the handle and to the sidewalls.

3,624,791
DISPENSING PACKAGE FOR PLASTIC BAGS AND THE LIKE
Hersh Taub, Brooklyn, N.Y., assignor to Instrument Systems Corporation, New York, N.Y.
Filed Jan. 9, 1970, Ser. No. 1,702
Int. Cl. B65h *1/08*
U.S. Cl. 221—59 **1 Claim**

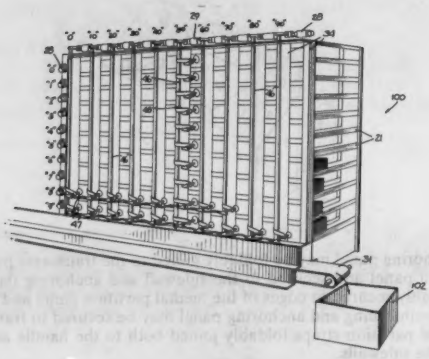


A dispenser box for polyethylene bags, tissues, or other such types of items. The dispenser consists of a triangular box with a cutout for dispensing along both sides of its top edge. Inside the box is a support, preferably made of corrugated cardboard and shaped in the form of a "T," positioned in an inverted manner inside of the box. The bags are draped about the bridge of the support and exposed through the cutout of the dispenser. The natural springiness of the corrugated cardboard has a tendency to force the bridge of the support upwards, pushing the bags against the dispenser opening. If necessary, rubber bands or other such similar elastic material can be placed along the bottom legs of the support to provide extra resiliency.

3,624,792
ORDER PICKING SYSTEM
Donald Ernest Lipfert, Woolwich, Maine, assignor to The McCall Pattern Company, New York, N.Y.
Filed Jan. 30, 1970, Ser. No. 7,192
Int. Cl. B65g *59/00*
U.S. Cl. 221—129 **24 Claims**

An electromechanical system which can select from a multiplicity of storage compartments any item corresponding to a decimal number input. The storage compartments are arranged in a grid pattern. One portion of the decimal number

input triggers a solenoid which activates a picking mechanism along a coordinate axis. The other portion of the number input activates a second picking mechanism along a coordinate axis which intersects with the first coordinate axis. The point of intersection of the two axes occurs at the storage bin form which it is desired to select an article, by the



interaction of the two complementary operating mechanisms on a picking mechanism. Picking of an article occurs only at such a point in the grid network. The device may operate on two or more crossed coordinates simultaneously or in rapid succession to provide ultrarapid assembly of a number of items to complete a specific order therefor.

3,624,793

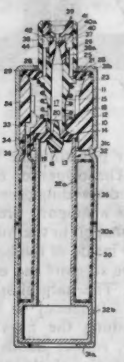
MINIATURIZED DOUBLE AEROSOL DISPENSER

Jean Marand, Norwalk, Conn., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.

Filed Apr. 16, 1970, Ser. No. 29,101

Int. Cl. B65d *35/28, 85/13*

U.S. Cl. 222—95 **13 Claims**



A double-aerosol-type dispenser in which the product to be dispensed and the propellant are kept separate until actually dispensed, in which the product is contained in a sac positioned in a space around a reduced diameter portion of a propellant cartridge and between a valve assembly and a lower portion of the propellant cartridge. The assembly is contained in a housing and has an outside diameter no greater than the outside diameter of the valve assembly. The nozzle assembly can be an integral part of the valve stem, or can be contained separately in a holder into which the subassembly of the valve, propellent cartridge, product sac and housing is inserted.

3,624,794

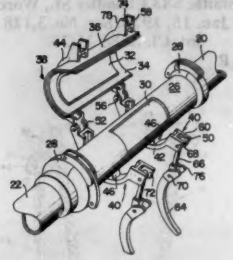
INSPECTION MEANS FOR CONCRETE-HANDLING SYSTEM

Robert C. Futty, Willow Street, Pa., assignor to Irl Daffin Associates, Incorporated, Lancaster, Pa.

Filed Dec. 17, 1968, Ser. No. 784,376

Int. Cl. F16l *55/00*

U.S. Cl. 222—154 **3 Claims**



An improved concrete-handling system comprising a concrete pump, delivery conduit means to carry the concrete from the pump to a remote worksite, and inspection means interposed between the concrete pump and the conduit is disclosed. The inspection means includes a pipe section with a portion cut away to provide easy access to the same and with cover means to close the opening during normal use. Clamps are provided to hold the cover means in position. The inspection means is especially useful to determine the location of a possible stoppage in the system as well as to sample the concrete flowing therethrough.

3,624,795

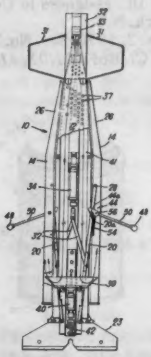
BUCK FOR SYNTHETIC GARMENTS

Terrence David Martin, Kent, England, assignor to Weston Laundry Machine Company Limited, Kent, England

Filed Mar. 19, 1970, Ser. No. 21,078

Int. Cl. A41h *5/00;* **D06c** *15/00, 79/00*

U.S. Cl. 223—70 **5 Claims**



This invention relates to bucks for laundry cabinet presses and in particular to one intended for use with synthetic garments. The buck is provided with arms which can be moved outwardly to fill the garment and the finishing operation is then carried out in two stages. In the first stage, hot air and steam or stem alone are blown through the garment to relax the fibers, and then hot air alone is blown through it to dry it out.

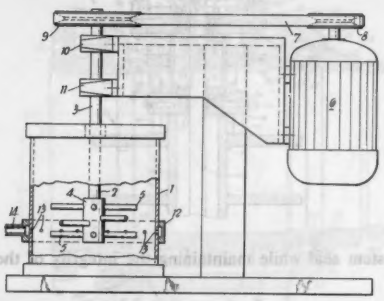
The buck has been provided with a latch mechanism which enables the arms to be moved outwardly in a different way for short and long garments without any further adjustment, and is designed to fit a conventional cabinet press with only minor modification of the press.

3,624,796

GRINDING OF MINERALS

Ronald Eric Brociner, St. Austell, England, assignor to English Clays Lovering Pochin & Company Limited, St. Austell, Cornwall, England

Filed May 8, 1970, Ser. No. 35,668
Claims priority, application Great Britain, May 15, 1969, 24,930/69
Int. Cl. B02c *11/08*
U.S. Cl. 241—23 14 Claims



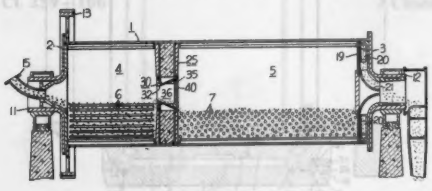
A process for grinding a dry, or substantially dry, material in which the material is ground with a particulate grinding medium consisting of particles ranging in size from 150 microns to one-fourth of an inch, the weight ratio of particulate grinding medium to material being in the range from 2:1 to 5:1. The mixture of material and grinding medium is cooled to prevent agglomeration of the particles of the material.

3,624,797

MULTIPLE COMPARTMENT GRINDING MILLS

Eugene P. Waddell, Brookfield, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Dec. 11, 1969, Ser. No. 884,149
Int. Cl. B02c *17/06, 17/18*
U.S. Cl. 241—153 4 Claims



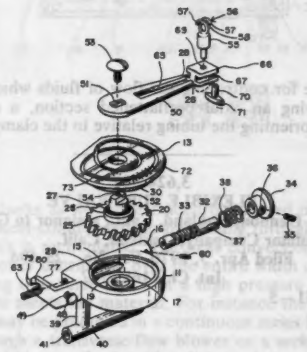
A grinding mill is disclosed having a cylindrical shell for rotation about its central axis and a division head that divides the interior of the shell into axially disposed compartments, one compartment containing steel rods for relatively coarse grinding and another compartment containing steel balls for finer grinding. The division head is an assembly of elements in which a pair of the elements are annular bulkheads perpendicular to the central axis and spaced apart from each other. The annular bulkhead on the coarse grinding side of the division head assembly defines a central opening of smaller diameter than the central opening defined by the annular bulkhead on the fine grinding side of the division head assembly. A liner extends between the radially inner peripheries of the two annular bulkheads and defines a central passage through the division head assembly with a surface having the configuration of a truncated cone with its central axis coincident with the central axis of the shell and with its apex end pointed toward the coarse grinding compartment. A shielding disk is concentrically mounted within the conical central passage in a plane perpendicular to the shell axis and supported by a plurality of arcuately spaced mounting blocks between the outer periphery of the shielding disk and the inner periphery of the conical central passage. The shield blocks a mass of grinding balls which tends to surge from the ball compartment toward the rod compartment during periods of mill acceleration at startup and during periods of deceleration when being stopped. The normal flow of pulp from the rod compartment into the ball compartment passes through the passage in channels between the mounting blocks and radially outward of the shielding disk.

3,624,798

LEVEL WIND GUIDE ATTACHEMENT FOR FISHING REELS

Oscar Fleischer, Miami, Fla., assignor to Helen Krohn Fleischer, executrix, by said Oscar Fleischer

Continuation-in-part of application Ser. No. 4,216, Jan. 20, 1970. This application June 19, 1970, Ser. No. 47,747
Int. Cl. A01k *89/00*; B65h *57/28*
U.S. Cl. 242—84.41 8 Claims



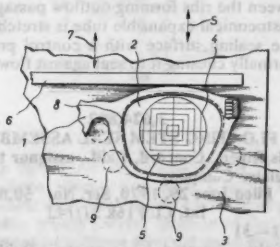
A level wind guide attachment for fishing reels adapted to be pivotally secured between the end housings of the fishing reel with an enclosed gear and worm gear in mesh engagement with each other; the worm gear being mounted on a shaft that extends beyond a housing and having a spring loaded friction wheel mounted thereon that is adapted to engage and rotate with one of the flanges of the line receiving spool. Rotating with the gear is an arm having a slot in which a cam follower and swiveled eyelet receiving the fishing line are positioned. The housing is provided with spiral interconnected slots of different diameters, one within the other in which the cam follower is slidably mounted whereby upon the revolving of the arm during the winding action of the fishing line, the latter is placed evenly on the spool.

3,624,799

DEVICE FOR THE DETACHABLE FASTENING OF THE GLASS MOUNT OF GLASS FRAMES ON A WORKTABLE

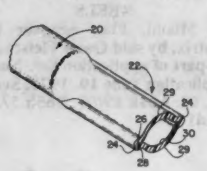
Thomas Sotonyi, Wuppertal-Barmen, Germany, assignor to Firma Wernicke & Co., Dusseldorf-Eller, Germany

Filed Oct. 9, 1969, Ser. No. 865,083
Claims priority, application Germany, Oct. 29, 1968, P 18 05 760.8
Int. Cl. B62b *35/00*; B25b *29/00*
U.S. Cl. 248—361 R 5 Claims



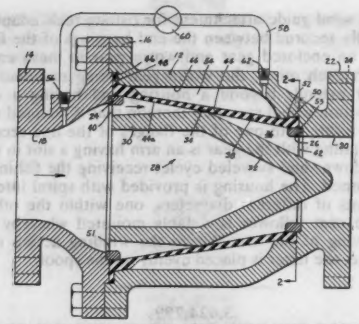
The invention relates to a device for the detachable fastening of the glass mount of frames for glasses on a worktable, etc., for example, an apparatus for the production of templets according to the glass or lens mount.

3,624,800
FLUID FLOW CONTROL MEANS
Edwin Grant Swick, Bartlett, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Sept. 29, 1969, Ser. No. 861,967
Int. Cl. F16k 7/02
U.S. Cl. 251—4 4 Claims



A device for controlling the flow of fluids which includes tubing having an axial preflattened section, a clamp and means for orienting the tubing relative to the clamp.

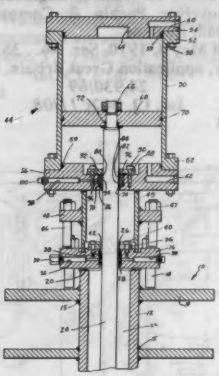
3,624,801
FLEXIBLE TUBE VALVE
Thomas E. Gannon, Oakland, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.
Filed Apr. 3, 1970, Ser. No. 25,494
Int. Cl. F16k 7/07
U.S. Cl. 251—5 10 Claims



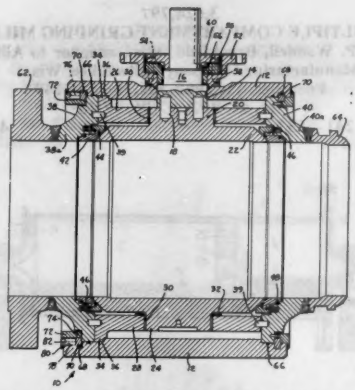
A flexible tube valve including a core having an annular series of longitudinal ribs, the outer surfaces of which define an interrupted frustoconical surface that merges with an annular sealing surface on a barrier between the inlet and outlet flow passages. The barrier includes a reinforcing conical portion integral with the ribs and extending toward the outlet, with spaces between the ribs forming outflow passages around the cone. A frustoconical expansible tube is stretched around the ribs and the sealing surface with a control pressure around the tube normally causing it to seal against flow.

3,624,802
FLOATING STEM SEAL ASSEMBLY
Roger Louis Ripert, Concord, Calif., assignor to Grove Valve and Regulator Company
Filed June 29, 1970, Ser. No. 50,841
Int. Cl. F16k 31/143
U.S. Cl. 251—31 5 Claims

A gate valve operated by a pressure-fluid-actuated ram with a piston mounted on the end of the stem. The stem is slidably received in stem seal assemblies on the valve bonnet and the fluid cylinder, with the valve stem seal assembly being in a floating mount to facilitate alignment with the valve stem seal while maintaining the integrity of the fluid seal.



3,624,803
BOLTED VALVE BODY CONSTRUCTION
Austin U. Bryant, Walnut Creek, and Jack E. Piccardo, Oakland, both of Calif., assignors to Grove Valve and Regulator Company, Oakland, Calif.
Filed Jan. 19, 1970, Ser. No. 3,735
Int. Cl. F16k 27/00
U.S. Cl. 251—367 3 Claims

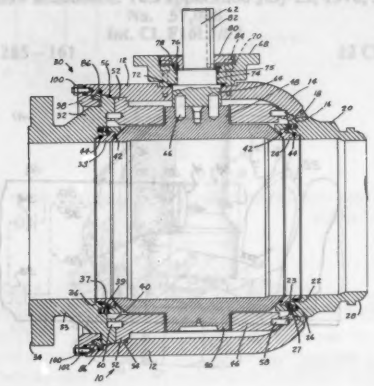


A valve body construction comprising a tubular body member with a closure received in one end thereof against an internal shoulder or other inward abutment. A thrust ring is also received in the one end of the body member outward of the closure with retainer means locking the thrust ring against outward movement to hold the closure in place. In a preferred embodiment, the retainer means comprises a ring received in the end of the body with a plurality of shear screws threaded into tapped holes around the juncture between the ring and end of the tubular body member.

3,624,804
FABRICATED VALVE BODY CONSTRUCTION
Jack E. Piccardo, Oakland, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.
Filed May 18, 1970, Ser. No. 38,178
Int. Cl. F16k 27/00
U.S. Cl. 251—367 6 Claims

A valve body construction comprising a tubular body member with a closure received in one end thereof against an

internal shoulder or other inward abutment. A segmented thrust ring is received in a groove around the inner wall of the body member outward of the closure to hold it in place. A lock ring has a conical axial extension that engages com-



plementary conical inner surfaces on the thrust ring segment to force the segments radially outward, whereby complementary wedging surfaces on the thrust ring and the wall of the retainer groove force the segments axially against the closure to clamp it in place.

3,624,805

ARRANGEMENT FOR RESETTING MIXING TOOLS IN DRUM MIXING MACHINES

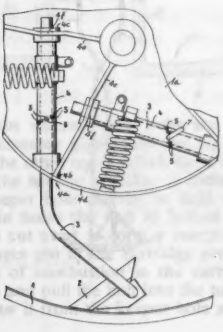
Rudolf Hagemuller, Hassloch, Germany, assignor to Firma Lico AG, Glarus, Switzerland

Filed May 4, 1970, Ser. No. 34,136

Claims priority, application Germany, May 19, 1969, P 19 25 328.2

Int. Cl. B01f *7/00*

U.S. Cl. 259—106 **2 Claims**



Arrangement for resetting mixing tools in drum mixing machines where mixing tools are coaxially supported by means of adjustable supporting arms in sleeves disposed in a mixing spider, where each sleeve is loosely disposed between two collars and has a plurality of apertures 5 that extend obliquely along its circumference, and the supporting arm has a bore 6 which corresponds in given positions with one of the apertures to place a latching pin therein.

3,624,806

METHOD OF HEAT TREATING BY CONVECTION OBJECTS, SUCH AS FLAT INDIVIDUAL BLANKS, MOLDED PULP ARTICLES OR CONTINUOUS WEBS OR THREADS, FOR EXAMPLE FOR PLASTIC FIBERS, AND A KILN FOR USE IN THE METHOD

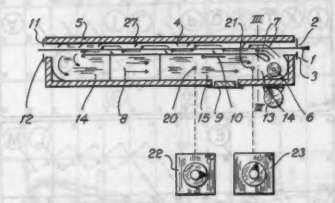
Per Haakon Lytzen, Klampenborg, Denmark, assignor to Aktieselskabet Brodrene Hartmann, Lyngby, Denmark

Filed Mar. 2, 1970, Ser. No. 15,388

Claims priority, application Denmark, Mar. 4, 1969, 1202/69

Int. Cl. F27b *9/28*

U.S. Cl. 263—3 **15 Claims**



Painted blanks as well as extruded or molded objects are exposed to heat-conditioned air by passing through a kiln in which the air is recirculated. The heat convection is intensified and better distributed over the entire width of the kiln by producing transverse layers of a high pressure in the air just before it meets the material. For instance the compression layers may be produced in a continuous series by passing the air through a transverse-flow blower or a series of concentric radial blower wheels with a distance between them to secure air inlet.

3,624,807

SHEET-CONVEYING DEVICE

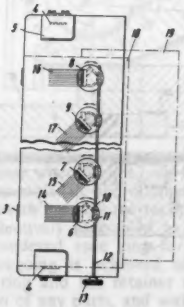
Bernd Schwebel, Offenbach am Main, Germany, assignor to Mabeg Maschinenbau GmbH, Nachf. Hense & Pleines GmbH & Co., Offenbach am Main, Germany

Filed Apr. 21, 1969, Ser. No. 817,679

Claims priority, application Germany, May 24, 1968, P 17 61 468.5

Int. Cl. B65h *29/24*

U.S. Cl. 271—74 **4 Claims**

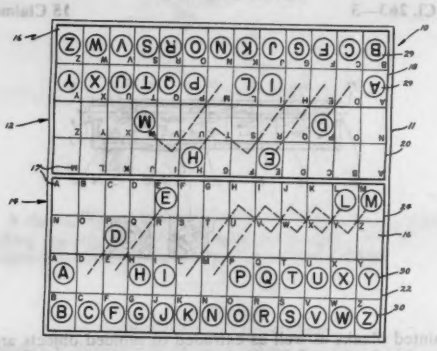


A conveying device for conveying sheets of cardboard, paper, or synthetic plastic foil upon a table of a sheet processing machine and into abutment with front and/or side stops on the table effects correct location of the sheets with respect to the stops by airflows directed upon the sheets from below. These airflows constitute moving air cushions supporting and conveying the sheets toward the stops and retaining the sheets in abutment therewith.

3,624,808
BOARD GAME APPARATUS

Reuben F. Anderson, Route # 1, Box 149, Swanville, Minn.

Filed Apr. 20, 1970, Ser. No. 29,853
Int. Cl. A63f 3/02
U.S. Cl. 273—131 G 1 Claim

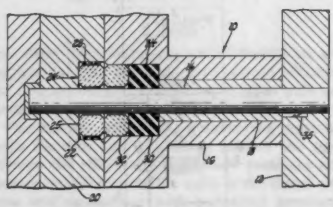


A game board for play by two persons comprising a pair of independent playing sections each consisting of a pair of related playing areas respectively divided into playing positions identified by indicia, one of said pair of related playing areas comprising initial positions and the other of said pair of related playing areas comprising ultimate playing positions the indicia on each initial position being the same as that on the corresponding ultimate position, and playing pieces bearing indicia corresponding to indicia of said playing positions, said playing pieces to be moved from said initial to said ultimate playing positions in a competitive manner by said players.

3,624,809
CERAMIC SEAL

Duane H. Beninga, Arvada, Colo., assignor to Coors Porcelain Company, Golden, Colo.

Filed Mar. 23, 1970, Ser. No. 21,856
Int. Cl. F16j 15/34
U.S. Cl. 277—92 1 Claim

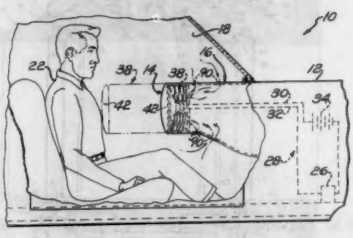


A composite ring seal for rotary shafts and the like including an aluminum oxide base ceramic ring, the outer diameter face being metallized and having a rubber annulus bonded thereto. This article may be secured to a rotating assembly such that an axial face of the ceramic ring abuts the axial face of another ring on a fixed assembly to effect a seal. The rubber annulus operates to support the ring and may be compressed by maintaining the seal rings in engagement.

3,624,810
VEHICLE SAFETY APPARATUS

David P. Hass, Detroit, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Feb. 25, 1969, Ser. No. 801,986
Int. Cl. B60r 21/10
U.S. Cl. 280—150 AB 25 Claims

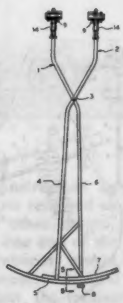


An improved safety device for protecting an occupant of a vehicle during an accident includes a confinement which is operable from a collapsed condition to an expanded condition in which it restrains movement of the occupants. The confinement is expanded by detonation of an explosive charge which propels a member outwardly to effect the expansion.

3,624,811
TOW BARS WITH DIFFERENT SELECTIVELY USABLE COUPLINGS

Robert R. Brackett, Route 6, Box 251, Kenosha, Wis.

Filed Apr. 29, 1970, Ser. No. 32,940
Int. Cl. B60d 1/16
U.S. Cl. 280—415 A 4 Claims



Two opposed heads each pivotally mounted on an end of one of the opposed members of the jaws of a tow bar. Each such head consisting of a series of faces each designed to engage an attaching device on an object to be towed. In order to lock the heads with the desired faces opposed spring-actuated locking dogs are fixed against rotation about each jaw to allow locking of the heads in as many positions as there are faces to be used. Optional means are provided to actuate the jaws and to adapt the invention to either a hand-towed or a power tractor-towed tow bar.

3,624,812

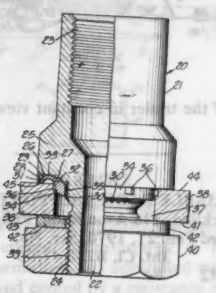
REPLACEABLE BULKHEAD CONNECTOR TUBE

Jose Rosan, Sr., San Juan Capistrano; Robert D. Weber, Costa Mesa; Marvin P. Reece, Dana Point, and William A. Knoll, Santa Ana, all of Calif., assignors to Rosan Engineering Corp., Newport Beach, Calif.

Continuation-in-part of application Ser. No. 785,141, Dec. 19, 1968, now abandoned. This application July 22, 1970, Ser. No. 57,048

Int. Cl. F16l 5/02

U.S. Cl. 285—161 22 Claims



A replaceable leakproof connector tube for passing electrical cables and the like therethrough which utilizes a mechanical antirotational lock for securing the same to workpieces and a compression member to seal the same against leakage.

3,624,813

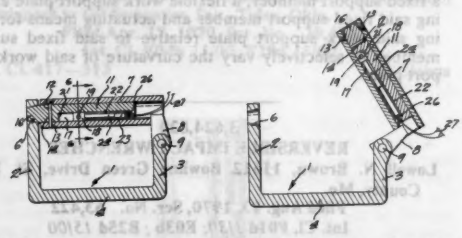
WEB RELEASE DEVICE

John A. Gaylord, San Rafael, Calif., assignor to H. Koch & Sons, Inc., Corte Madera, Calif., a division of Global Systems, a Gulf/Western Company

Filed Nov. 28, 1969, Ser. No. 880,771

Int. Cl. B64d 17/38; A44b 11/00

U.S. Cl. 294—83 AE 5 Claims



One of the webs wherein two webs are connected, is looped around a crossbar pivoted on one leg of a generally U-shaped frame, the other leg of which has a keeper hole. A bolt slideable in the tubular crossbar is initially in engagement with the keeper hole thereby to hold the webs connected. A shearpin holds the bolt in locked position. One side of the bolt is cut away to form a receptacle for a cartridge with a plunger pin in the cartridge pressed against a stop by the gases of combustion in the cartridge so as to shear the shearpin and pull the bolt into the tubular crossbar thereby to withdraw it from the keeper hole and release the web.

3,624,814

FRAME FOR FOLDING FURNITURE

Donald J. Borichevsky, Wells, Vt., assignor to The Telescope Folding Furniture Co., Inc., Granville, N.Y.

Filed Mar. 12, 1969, Ser. No. 806,467

Int. Cl. A47c 7/02, 4/28

U.S. Cl. 297—452 11 Claims

The back and seat of the chair or chaise are each constructed of a U-shaped frame to which a decorative sheet of vinyl film is secured and over which a clear or slightly tinted vinyl tube is wound. In addition, the vinyl tube is heat-sealed to the sheet of vinyl film along a pair of lines so as to provide a further reinforced seat or back.

ERRATUM

For Class 307—221 see:
Patent No. 3,624,838

3,624,815

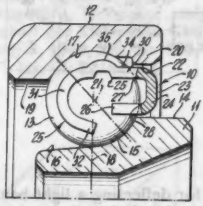
BALL RETAINER AND BEARING

Michael Schweitzer, Southington, Conn., assignor to Textron Inc., Providence, R.I.

Filed Jan. 27, 1970, Ser. No. 6,081

Int. Cl. F16c 33/38

U.S. Cl. 308—201 14 Claims

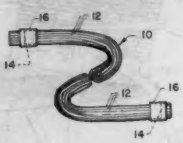


The invention contemplates the particular construction of a bearing-ball retainer whereby not only may the ball complement be fully assembled to the retainer prior to bearing-ring assembly therewith but also the retainer-and-ball subassembly may be selectively assembled to and disassembled from a double-shouldered race ring for unitary handling therewith. The foregoing is achieved solely by coaction between the race ring and the retainer ring, without permanent deformation of any parts, and without requiring any additional parts. Bearing assembly is completed using a single-shouldered (i.e., open end) construction for the other race ring, so that the preassembled ring with retained balls may be manipulated as a unit into overlap with the open or nonshouldered end of the said other race ring.

ERRATUM

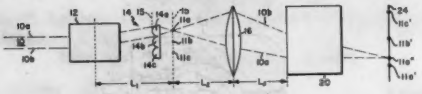
For Class 318—331 see:
Patent No. 3,624,837

3,624,816
FLEXIBLE FIBER OPTIC CONDUIT
Richard R. Strack, and Roland A. Phaneuf, both of Sturbridge, Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Jan. 28, 1970, Ser. No. 6,470
Int. Cl. G02b 5/16
U.S. Cl. 350—96 B 5 Claims



A flexible fiber optic conduit formed of a multiplicity of juxtaposed light-conducting fibers all connected together adjacent opposite ends of the conduit by a matrix of silica-free acid soluble glass with said connecting glass having been leached from the intermediate portion of the bundle leaving corresponding lengths of individual fibers thereof unconnected and free to flex individually. Short lengths of semiflexible heat-shrunken plastic tubing tightly surround transitional zones between unconnected and connected together portions of the individual fibers adjacent opposite ends of the conduit. These lengths of tubing strengthen and protect the aforesaid transitional zones against undue breakage during use of the conduit as a light and/or image transmitting device.

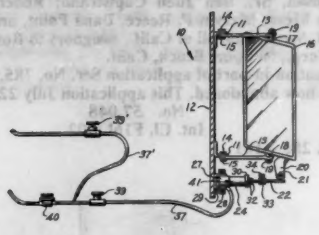
3,624,817
LIGHT-DEFLECTION SYSTEM
Tzuo-Chang Lee, Minneapolis, and James David Zook, Burnesville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed July 11, 1969, Ser. No. 841,057
Int. Cl. G02f 3/00
U.S. Cl. 350—150 11 Claims



In a system for deflecting a light beam, a separate lens is positioned at each of the distinguishable beam positions (resolvable spots) produce by a first light beam deflector. The focusing action of the lenses separately reduces the size of each resolvable spot. The increases separation generated between any two adjacent resolvable spots of reduced size is advantageously utilized by incorporating a second light beam deflector into the deflection system. The second light beam deflector selectively deflects the light beam into the separations between the reduced resolvable spots, thereby obtaining the product of the number of resolvable spots obtainable from the first and second deflectors separately.

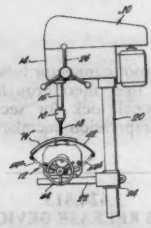
3,624,818
REMOTE-CONTROLLED TRUCK MIRROR
Bradford O. Stanfield, 9449 Grace St., Fontana, Calif.
Filed Oct. 9, 1970, Ser. No. 79,378
Int. Cl. G02b 5/08
U.S. Cl. 350—289 3 Claims

A mirror which is controlled by the truck driver from the interior of the cab of the truck. This device includes an air or vacuum cylinder with a piston and rod on its interior which when actuated by a controlled valve will rotate the mirror from is normal position so that the driver will be able to keep



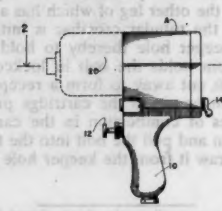
the rear end of the trailer in constant view when backing up the vehicle.

3,624,819
VARIABLE RADIUS SUPPORT TABLE
Robert A. Schickling, 346 Avon Raod, Philadelphia, Pa.
Filed Feb. 27, 1970, Ser. No. 15,123
Int. Cl. B23b 41/00
U.S. Cl. 408—92 6 Claims



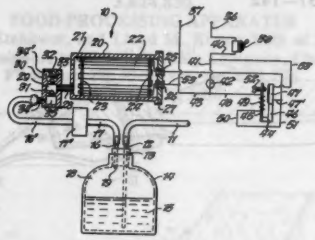
A variable radius support table for apparatus for performing machining operations comprising a main frame including a fixed support member, a flexible work support plate engaging said fixed support member and actuating means for flexing said work support plate relative to said fixed support member to selectively vary the curvature of said work support plate.

3,624,820
REVERSIBLE IMPACT WRENCHES
Lowell N. Brown, 11612 Bowling Green Drive, St. Louis County, Mo.
Filed Aug. 13, 1970, Ser. No. 63,422
Int. Cl. F01d 1/30; E03b ; B25d 15/00
U.S. Cl. 415—152 8 Claims



This invention relates to a reversible impact wrench in which the rotation director and exhaust are provided in a single continuous bore which may be machined after casting, thereby reducing the cost thereof, and further which provides a manually regulatable trigger valve which utilizes overlapping bores in a sleeve rotatably mounted in a fixed shell to adjust the amount of air delivered to the rotor.

3,624,821
SUCTION PUMP
Stanford A. Henderson, 49 Wansfell Road, Snyder, N.Y.
Filed Sept. 17, 1969, Ser. No. 858,704
Int. Cl. A61m 1/00; F04f 1/06, 3/00
U.S. Cl. 417—137 11 Claims

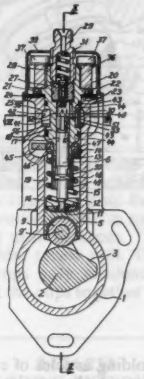


A medical suction pump including a pump housing having a filament therein which is alternately heated and cooled by passing electric current therethrough in response to the operation of a thermostatically controlled switch which is alternately heated and cooled by a resistance element, an inlet conduit in communication with the pump which communicates suction pressure produced by the pump to a patient during the cooling of gases within the housing, the parameters of the electrical circuit being such as to always heat the filament sufficiently so as to cause the pump to always be capable of producing a suction pressure in excess of predetermined value regardless of the variable conditions to which the pump is subjected, and a control valve assembly in the suction line responsive to the suction pressure created by the pump to selectively bleed a variable amount of air into the inlet conduit to maintain the suction pressure at said predetermined value.

3,624,822
GAS SEPARATOR FOR A SUBMERSIBLE OIL PUMP
Joseph T. Carle, and Charles L. Choate, both of Tulsa, Okla., assignors to Oil Dynamics, Inc., Tulsa, Okla.
Filed Apr. 17, 1970, Ser. No. 29,474
Int. Cl. F04b 21/00; F28d 15/00
U.S. Cl. 417—313 3 Claims

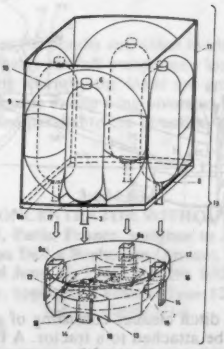
A gas separator interposed between a submersible pump and electric motor includes a plurality of flow diversion means including a coaxial impeller for impelling well fluid through a spiral gas separator chamber wherein entrained gas is centrifugally separated from the well fluid. The disentrained gas is subsequently returned to the well fluid basin while the well fluid passes from the gas separator chamber into the inlet of a submersible pump.

3,624,823
MULTICYLINDER FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES
Heinrich Staudt, Markgroningen-Talhausen, and Eberhard Hofmann, Kirchberg, Murr Neuhof, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Mar. 17, 1970, Ser. No. 20,217
Claims priority, application Germany, Mar. 18, 1969, P 19 13 520.7
Int. Cl. F04b 7/04, 27/00
U.S. Cl. 417—454 2 Claims



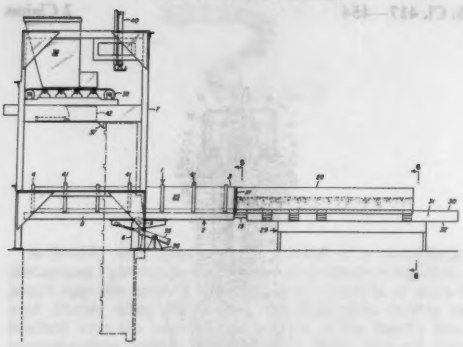
For providing a sturdy, simplified and easily adjustable and disassemblable multicylinder fuel injection pump, the sidewalls and base walls of the pump housing are uninterrupted by openings for servicing; the pump pistons operate in cylinder sleeves each of which is directly insertable in an associated housing bore and supported therein by a collar integral with said cylinder sleeve and engaging said pump housing; said cylinder sleeves are held and secured in said housing bores by means of clamping yokes.

3,624,824
PHOTOFLASH LAMP
Karl Herrmann, Augsburg, Germany, assignor to Patent-Treuhand-Gesellschaft Fur Elektrische Gluhlampen mbH
Filed July 3, 1969, Ser. No. 838,758
Int. Cl. F21k 5/02
U.S. Cl. 431—93 3 Claims



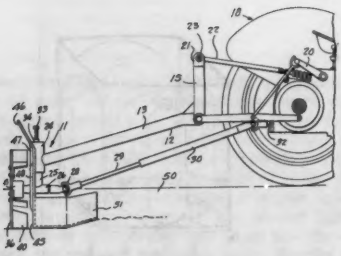
A flash lamp containing oxygen under pressure and also a pyrogenic ignitor activatable by percussive force mechanically applied externally while the lamp envelope remains intact and pressure therein maintained; the disclosure including a cubical holder for mounting a plurality of the flash lamps for successive percussive actuation.

3,624,825
CONCRETE MOLDING MACHINE
Charles J. Heitzman, 1260 Laukahi, Honolulu, Hawaii
Filed Feb. 17, 1969, Ser. No. 799,564
Int. Cl. B28b *7/10*
U.S. Cl. 25—41 R **9 Claims**



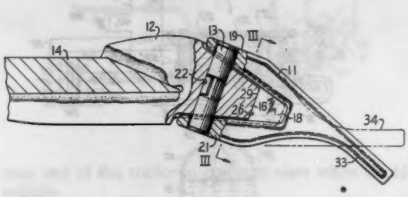
A machine for molding articles of concrete and other self-hardening material in which a mold box containing a mold open at one end, a stripping ram and a push plate driven by the ram for pushing a finished article and its pallet from the mold's open end, are all mounted on a pivoted bed for swinging therewith between a vertical loading position and a horizontal stripping position, the parts other than the ram and bed being selectively changeable and the connection between the ram and push plate adjustable for molding articles of different shapes and lengths, and a releasing connection enabling the ram on retraction to feed a new pallet into the mold.

3,624,826
ROTARY MECHANICAL DITCH CLEANER
Charlie M. Rogers, Mancos Rt. 2, Colo.
Filed Feb. 28, 1969, Ser. No. 803,308
Int. Cl. E02f *5/08;* **A01b** *33/04*
U.S. Cl. 37—92 **3 Claims**



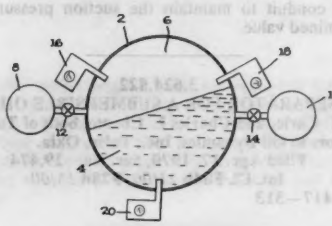
An irrigation ditch cleaner consisting of a T-shaped frame bar adapted to be attached to a tractor. A transverse rotor is journaled to the frame bar and has cutting blades and fins. The rotor is adapted to be drivingly connected to the power takeoff shaft of the tractor. The frame bar has a transverse guard shield with an inclined top deflection flange, the shield being located forwardly adjacent the rotor flange overlying the rotor. The shield has spaced parallel longitudinal forwardly extending supporting skids at its bottom end adapted to slidably support the rotor in a ditch to be cleaned.

3,624,827
EARTHWORKING TOOTH AND SUPPORTING ADAPTER
Richard K. Liess, and Max J. Teasdale, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 11, 1968, Ser. No. 782,845
Int. Cl. E02f *9/28*
U.S. Cl. 37—142 **16 Claims**



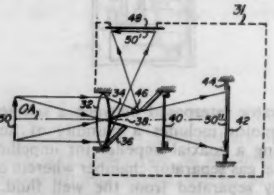
An earthworking tip suitable for mounting on an adapter which is wedge-shaped in vertical cross section. The tip defines a rearwardly facing V-shaped projection which mates with a V-shaped opening in the adapter to transfer loads from the tip to the adapter. The tip has rearwardly extending upper and lower flanges to generally mate with the wedge-shaped adapter. Retaining means secure the tip upon the adapter.

3,624,828
VOLUME MEASURING SYSTEM
Harrison F. Edwards, Norwich, N.Y., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.
Continuation of application Ser. No. 406,996, Oct. 28, 1964. This application Oct. 17, 1968, Ser. No. 768,320
Int. Cl. G01f *17/00*
U.S. Cl. 73—149 **4 Claims**



A system for measuring the quantity of fluid in a container having an ullage space provided therein which utilizes a trace gas introduced into the ullage space and a detecting means for measuring the density of the trace gas. By measuring the density of the trace gas the volume of the ullage space and hence the volume of the fluid in the container can be ascertained.

3,624,829
REFLEX CAMERA APPARATUS
Richard F. Crone, 2101 Beach St., San Francisco, Calif.
Filed Nov. 8, 1968, Ser. No. 774,238
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **6 Claims**



A single lens reflex camera apparatus having a continuously observable view-finding feature. An apertured mirror is

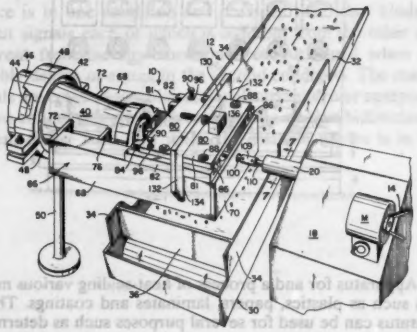
provided between the entrance aperture and shutter of a camera with the mirror aperture positioned along the optical axis of the camera, so that the film-exposing light passes therethrough and the remaining light passing into the camera is reflected onto the view-finder.

3,624,830

FOOD-PROCESSING APPARATUS

Donald J. Stehower, and Lloyd M. Koops, both of Hamilton, Mich., assignors to HI-Life Packing Company, Chicago, Ill.

Filed Nov. 28, 1969, Ser. No. 880,766
Int. Cl. A23k *1/00*
U.S. Cl. 99—235 R **11 Claims**



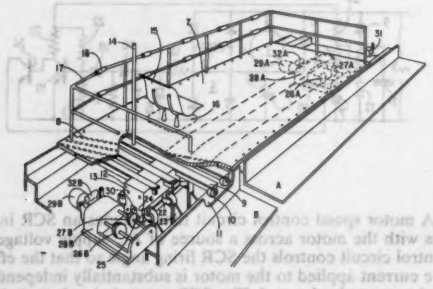
A food-processing apparatus, especially useful in the preparation of dog food of the chunk or kibbled variety. A rotary cutter assembly coacts with a stationary perforated extrusion plate to shear extruded material therefrom and by way of a novel mounting means is capable of adjustment toward and away from the extrusion plate without shutting down or stopping the operation of the apparatus thus compensating for wear of the blades of the cutter assembly.

3,624,831

APPARATUS FOR MOVING VEHICLE PASSENGER TRANSFER

Tibor Z. Harmathy, 1834 Playfair Drive, Ottawa 8, Ontario, Canada

Filed Apr. 1, 1969, Ser. No. 811,823
Int. Cl. B61k *1/00*
U.S. Cl. 104—20 **3 Claims**



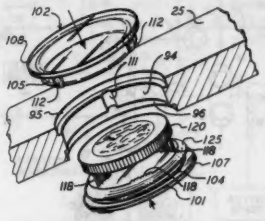
Transportation vehicles are divided longitudinally into two areas; a strip area which is continuously available for the passengers, and an operational area formed to accommodate a mobile people-platform. The people-platform is built on a flexible spine guided in its movement along the center line of the vehicles. The platform assembly is propelled by some power source or power sources located either in the said operational areas of the vehicles or on the platform itself.

3,624,832

DISPLAY HOLDER FOR DISCS

John Malcolm Dunn, 305 Via Montego, San Clemente, Calif.

Filed Feb. 27, 1969, Ser. No. 802,782
Int. Cl. A45c *11/28*
U.S. Cl. 206—0.83 **4 Claims**



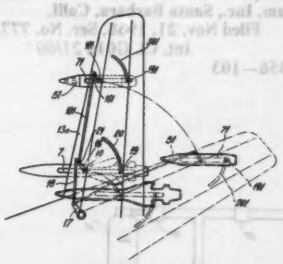
Transparent, flanged, mating cups encapsulate a coin, medallion or other disc. A cup holder having one or more recesses receives the cups and disc. Each recess is countersunk in obverse and reverse faces to receive the cup flanges. Each cup has locator protuberances. The outer cup locators fit cavities in the holder recess wall. The inner cup locators grip the disc. The cups have mechanically latching annuli which engage to hold the cups together and retain the cups in the holder.

3,624,833

DEVICE FOR ATTACHING EXTERNAL LOADS TO THE WINGS OF AIRCRAFT OF VARIABLE GEOMETRY

Armand G. Ricard, Viroflay, Yvelines, France, assignor to Breguet-Aviation, Yvelines, France

Filed Apr. 9, 1969, Ser. No. 814,596
Claims priority, application France, Apr. 19, 1968, 148733
Int. Cl. B64c *3/40*
U.S. Cl. 244—118 **6 Claims**



An attachment for bombs and other loads under the wings of variable geometry aircraft comprises a load support articulated to the wing whereby the loads are enabled to pivot or rotate as the variable sweep wing pivots so that the loads are always maintained parallel to the direction of flight of the aircraft.

3,624,834

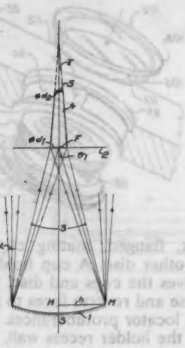
OPTICAL CONCENTRATOR WITHOUT FLUX LOSS

Pierre Malifaud, Paris, France, assignor to Agence Nationale De Valorisation De La Recherche (Anvar), Puteaux, France

Filed June 12, 1969, Ser. No. 832,762
Claims priority, application France, June 12, 1968, 154665
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 **2 Claims**

The present invention relates to an optical concentrator without flux loss, comprising a parabolic frontal mirror with half opening θ_1 (angle made to the optical axis by a straight line that joins the focus to the mirror edge) effecting a primary concentration of a flux captured from a distance source of radiation, forming a spot image in the smallest section of a beam of convergent rays with half angle opening θ_1 with the optical axis, and a truncated cone mirror whose entrance sec-

tion of diameter d_1 is disposed in coincidence with the total spot image furnished by the said frontal parabolic mirror and



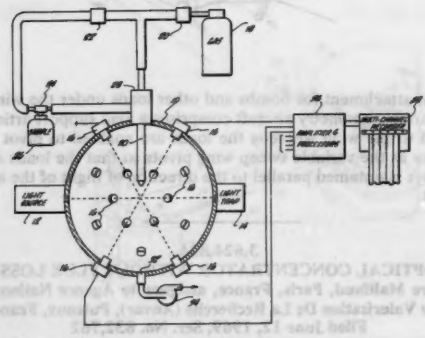
whose terminal section which is of smaller diameter is associated with a sensitive element or radiation transformer of a receiver.

3,624,835

MICROPARTICLE ANALYZER EMPLOYING A SPHERICAL DETECTOR ARRAY

Philip J. Wyatt, Santa Barbara, Calif., assignor to Science Spectrum, Inc., Santa Barbara, Calif.

Filed Nov. 21, 1968, Ser. No. 777,837
Int. Cl. G01n *21/00*
U.S. Cl. 356—103 **4 Claims**



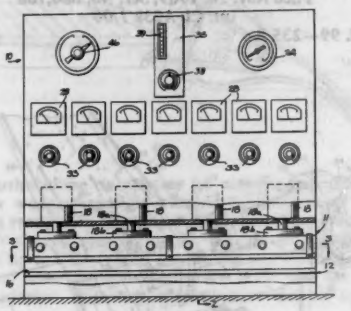
There is described a method and apparatus for identifying submicroscopic particles by directing the particles through a highly collimated beam of light and simultaneously measuring the light intensity at a plurality of different angles relative to the point where the particles move through the beam.

3,624,836

TEMPERATURE GRADIENT BAR SEALER

Howard A. Rohdin, Waquoit, Mass., assignor to Packaging Industries, Inc., Hyannis, Mass.

Filed Apr. 11, 1969, Ser. No. 815,477
Int. Cl. H05b *1/00*
U.S. Cl. 219—243 **9 Claims**



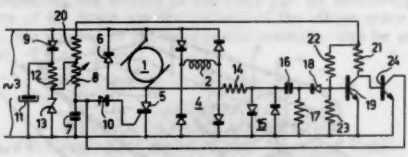
Apparatus for and a process of heat-sealing various materials such as plastics, papers, laminates and coatings. The apparatus can be used for several purposes such as determining the optimum temperature at which a given heat-sealing operation should be conducted under given conditions of pressure and dwell time and to effect increased quality control by maintaining the temperature at which the heat is supplied during the heat-sealing operation under given conditions of pressure and dwell time.

3,624,837

MOTOR SPEED AND TORQUE CONTROL CIRCUIT WITH E.M.F. FEEDBACK

Scato Albarda, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 11, 1969, Ser. No. 806,193
Claims priority, application Netherlands, Mar. 16, 1968, 6803778
Int. Cl. H02p *5/06*
U.S. Cl. 318—331 **14 Claims**



A motor speed control circuit that includes an SCR in series with the motor across a source of AC supply voltage. A control circuit controls the SCR firing angle so that the effective current applied to the motor is substantially independent of the motor back e.m.f. The SCR control circuit includes a timing circuit that produces a time variable ignition pulse for controlling the SCR firing angle. The reference point for the timing circuit is that instant when the motor back e.m.f. equals the voltage of the trailing edge of the forward half cycle of the AC supply voltage. This choice of the reference point causes the SCR control circuit to advance the ignition of the SCR when the back e.m.f. increases, whereas prior art circuits delay the SCR ignition for increased back e.m.f. However, the overall conduction angle of the SCR remains

approximately constant by virtue of a reset switch that resets the timing circuit at the aforesaid reference point. Thus, the effective motor current stays approximately constant within given limits.

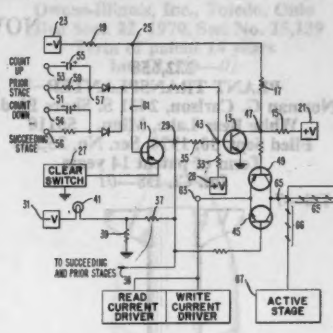
3,624,838

ADDRESS COUNTER STAGE CIRCUITRY

George R. Cogar, R.D. #3, Frankfort, N.Y. 13340

Filed Feb. 28, 1966, Ser. No. 534,583
Int. Cl. G11c *19/00*; H03k *21/00*
U.S. Cl. 307—221 8 Claims

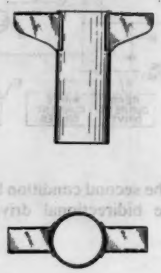
The present device is a stage of a data processing register which is capable of either incrementing or decrementing, depending upon the conditions of the previous or succeeding stages. The present device incorporates a bistable device which provides two identical output signals when the bistable device is in one condition and provides two other kinds of output signals each of which is different from the other and different from the first mentioned output signal when the bistable device operates in the second condition. The output signals are coupled to a bidirectional current driver composed of two conducting elements and operate on that bidirectional current driver such that when the bistable device is in the first condition the bidirectional current driver has either conducting element available for operation while when the bistable device is in the second condition both of the conducting elements of the bidirectional driver are turned off.



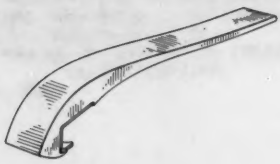
DESIGNS

NOVEMBER 30, 1971

222,658
PLANT TRANSPLANTER
Norman G. Carlson, 2431 S. Shore Blvd., White Bear Lake, Minn. 55110
Filed Sept. 30, 1970, Ser. No. 25,283
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—7

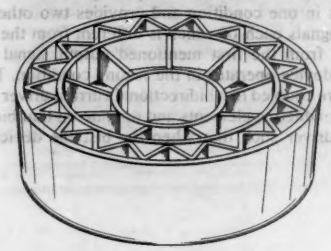


222,659
BOTTLE OPENER
Donald A. Hillis, 27 Kingslake Road, Willowdale, Ontario, Canada
Filed July 23, 1970, Ser. No. 24,079
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—40



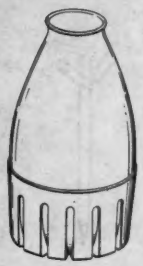
222,660
ELECTRIC SCISSORS
John K. Miles, Columbus, Ind., and Jack F. Baker, Glenview, Ill., assignors to Arvin Industries, Inc., Columbus, Ind.
Filed Aug. 12, 1970, Ser. No. 24,433
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—61

222,661
PAPER ROLL PLUG
Robert L. Nichols, 1022 S. Bolton, Jacksonville, Tex. 75766
Filed July 17, 1970, Ser. No. 23,996
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220



222,662
COMBINED BOTTLE AND CLOSURE THEREFOR
Giorgio Fabbri, Via Emilia Ponente 276, Bologna 40132, Italy
Filed Aug. 7, 1970, Ser. No. 24,375
Claims priority, application Italy May 8, 1970
Term of patent 3½ years
Int. Cl. D9—*01*
U.S. Cl. D9—1

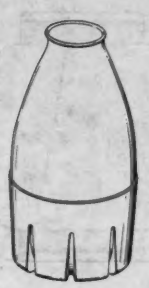
222,663
BOTTLE
Edward H. Lawton, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 22, 1970, Ser. No. 25,136
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1



222,664
BOTTLE
Edward H. Lawton, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 22, 1970, Ser. No. 25,137
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1

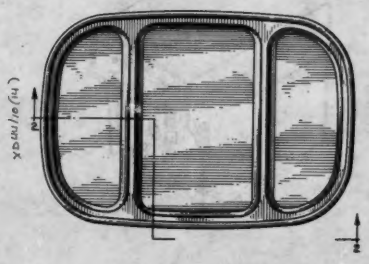
222,665
BOTTLE
Edward H. Lawton, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 22, 1970, Ser. No. 25,138
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1

222,666
BOTTLE
Edward H. Lawton, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 22, 1970, Ser. No. 25,139
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1

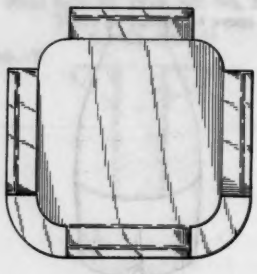


222,667
BOTTLE
Edward H. Lawton, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 22, 1970, Ser. No. 25,141
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1

222,668
COMPARTMENTED TRAY
Donald H. Gregor, Chicago, Ill., assignor to Ekco Products, Inc., Wheeling, Ill.
Filed Oct. 26, 1970, Ser. No. 25,640
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185

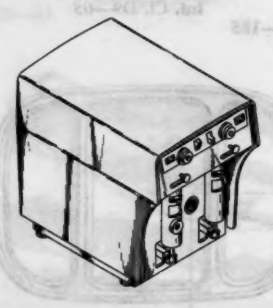


222,669
COMBINED SHIPPING AND DISPLAY PACKAGE FOR DISHES OR THE LIKE
David J. Freiman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Sept. 30, 1970, Ser. No. 25,280
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—250



222,670
INDUSTRIAL PALLET TRUCK
Cecil Goodacre, Basingstoke, and Roy Haynes, Danbury, England, assignors to Lansing Bagnall Limited, Basingstoke, Hampshire, England
Filed Nov. 3, 1970, Ser. No. 25,799
Claims priority, application Great Britain May 4, 1970
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3

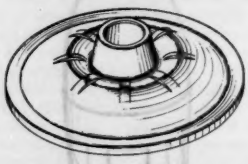
222,671
AUTOMATIC PIPETTE
Alfred M. Blumenfeld, Jenkintown, Pa., assignor to Micromedic Systems, Inc., Philadelphia, Pa.
Filed Nov. 16, 1970, Ser. No. 25,976
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—2



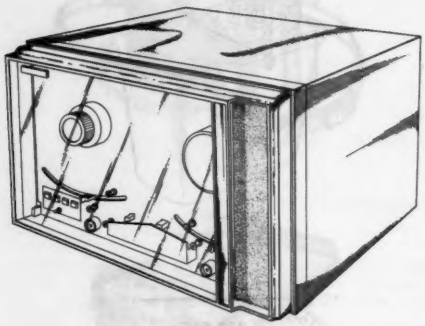
222,672
COMBINATION TRAILER HITCH SUPPORT AND FISHING POLE HOLDER
Chester J. Sather, 1215 26th St., Ames, Iowa 50010
Filed July 27, 1970, Ser. No. 24,129
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22

222,673
FISHING POLE HOLDER
Willis E. Green, 6216 Main Ave., Orangevale, Calif. 95662
Filed Aug. 11, 1970, Ser. No. 24,424
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22

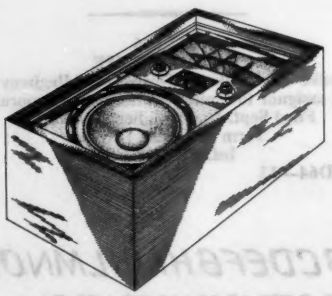
222,674
SPRINKLER HEAD SHIELD
Paul Engel, Beaumont, Calif., assignor to A-E-G Mfg. Co., Beaumont, Calif.
Filed Aug. 10, 1970, Ser. No. 24,404
Term of patent 14 years
Int. Cl. D23—*07*
U.S. Cl. D23—7



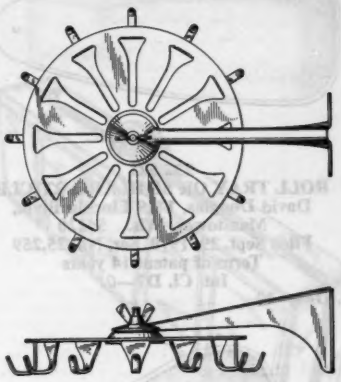
222,675
MAGNETIC TAPE TRANSPORT
Leon C. Sanderson, Culver City, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Oct. 21, 1970, Ser. No. 25,591
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



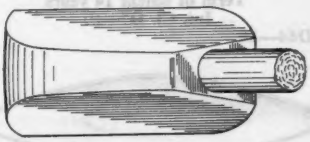
222,676
SPEAKER CABINET
Haruo Ishikawa, 314, 12–35, 1-chome, Matsunoki, Suginami-ku, Tokyo, Japan
Filed Nov. 6, 1970, Ser. No. 25,863
Claims priority, application Japan June 12, 1970
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



222,677
REVOLVING TOOL RACK
Bela B. Nevai, Dobbs Ferry, N.Y., assignor to Nevco Wood Products Co., Inc.
Filed Sept. 14, 1970, Ser. No. 24,955
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—17



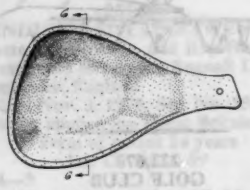
222,678
GOLF CLUB
George M. Dick, 3063 Brighton Blvd., Denver, Colo. 80216
Filed Aug. 28, 1970, Ser. No. 24,742
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



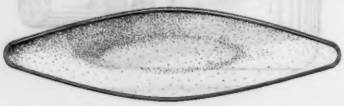
222,679
GOLF CLUB HEAD
Marcel Gryseels, 21753 McCormick, Detroit, Mich. 48236
Filed Nov. 6, 1970, Ser. No. 25,854
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

222,680
BREAD TRAY OR SIMILAR ARTICLE
David Douglas, 1119 Lincoln Blvd., Manitowoc, Wis. 54220
Filed Sept. 29, 1970, Ser. No. 25,256
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10

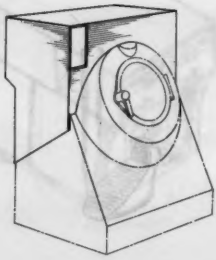
222,681
ROLL TRAY OR SIMILAR ARTICLE
David Douglas, 1119 Lincoln Blvd., Manitowoc, Wis. 54220
Filed Sept. 29, 1970, Ser. No. 25,259
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10



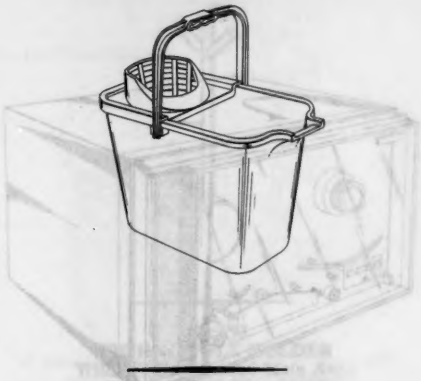
222,682
RELISH TRAY OR SIMILAR ARTICLE
David Douglas, 1119 Lincoln Blvd., Manitowoc, Wis. 54220
Filed Sept. 29, 1970, Ser. No. 25,261
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10



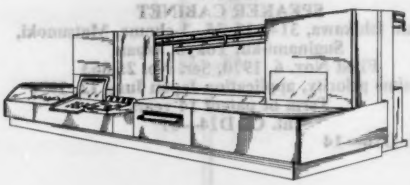
222,683
LAUNDRY WASHER ADAPTER
Miles R. Leach, 2025 W. 10th St., Santa Ana, Calif. 92703
Filed Aug. 28, 1970, Ser. No. 24,745
Term of patent 7 years
Int. Cl. D15—*05*
U.S. Cl. D49—1



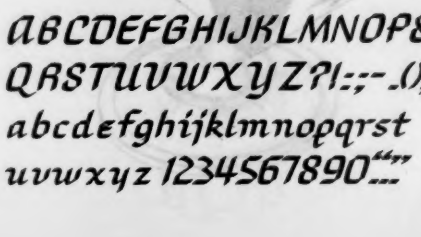
222,684
COMBINED PAIL AND MOP WRINGER
Juan Gunfaus, Tarrasa, Barcelona, Spain, assignor to Mery, S.A., Barcelona, Spain
Filed Nov. 2, 1970, Ser. No. 25,784
Claims priority, application Spain May 8, 1970
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—29



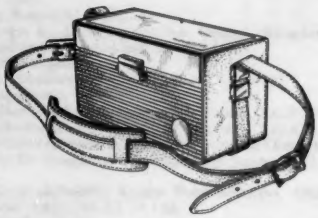
222,685
PRINTING PLATE PROCESSING MACHINE
Hugh T. Greenlee, Gates Mills, Ohio, and Wesley W. Miller, Wyncote, and Gerold Litschi, Lansdale, Pa., assignors to W. R. Grace & Co., New York, N.Y.
Filed Aug. 21, 1970, Ser. No. 24,640
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D55—1

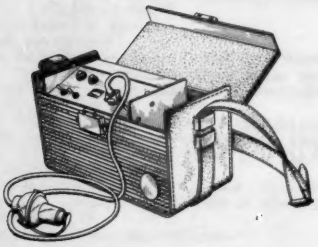


222,686
FONT OF TYPE
Ernst Budke III, Wilkens Township, Allegheny County, Pa., assignor to United States Steel Corporation
Filed Sept. 16, 1970, Ser. No. 25,314
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D64—12

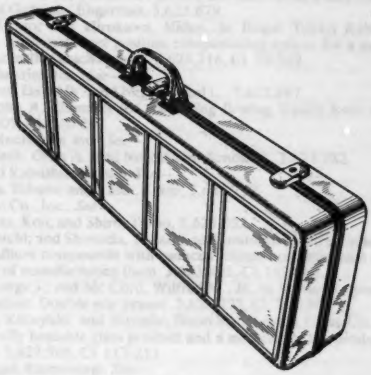


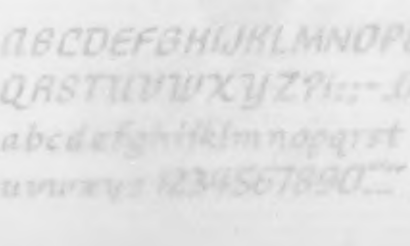
222,687
RESPIRATOR
William W. Adams, 8332 Verona Drive, Hyattsville, Md. 20784
Filed Sept. 11, 1970, Ser. No. 24,950
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1





222,688
ARCHERY CASE
Joaquin J. Canton, Riverdale, N.Y., assignor to Challenger Mfg. Corporation, Jamaica, N.Y.
Filed Sept. 30, 1970, Ser. No. 25,281
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1





LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF NOVEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Latina, Roland N., 3,623,163.

Aagard, Roger L., to Honeywell Inc. Optical character recognition system and method. 3,624,605, Cl. 340-146.3

AB Bonnierforetagen: *See—*
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Abbott Laboratories: *See—*
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Stein, Herman Hal; and Goodsell, Elizabeth, 3,624,216.

Abbotts, William Edward, to Solartron Electronic Group Limited, The. Apparatus for measuring the densities of fluids. 3,623,357, Cl. 73-32.

Abe, Kenji, to Kabushiki Kaisha Suwa Seikosha. Clubtooth lever escapement. 3,623,316, Cl. 58-116.

Abex Corporation: *See—*
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Abild, Robert N., to United Aircraft Corporation. Control system for liquid rocket. 3,623,329, Cl. 60-243.

Abitibi St. Anne Paper Ltd.: *See—*
McKenzie, Ian, 3,623,567.

Abramovitch, Rudolph A.; and Singer, George M., to Warner-Lambert Company. Process for producing certain amide derivatives of pyridine and reducing said amides to corresponding amines. 3,624,096, Cl. 260-294.9

Abromavage, John C.; and George, James F., to Advanced Management Engineering & Research Co. Ceiling entrance door system for multiphasic medical examination laboratory. 3,623,283, Cl. 52-19.

ACF Industries, Incorporated: *See—*
Randolph, Robert W.; and Reedy, Charles E., 3,624,781.

A.C.F.A. Accessori Calzature Fibbie Affini di Adalberto Sussman Steinberg & C.S.r.l.: *See—*
Steinberg, Adalberto Sussman, 3,623,647.

Acme Visible Records, Inc.: *See—*
Manoff, Arthur, 3,623,252.

Action-Age, Inc.: *See—*
Ward, Eugene T.; Sklar, Richard; and Pierman, Harvey H., 3,623,565.

Adams, George F., to Universal Oil Products Company. Process for the production of para-xylene. 3,624,172, Cl. 260-668.

Adams, Harold B. Tree balling machine. 3,623,245, Cl. 37-2.

Adams, Monte E. Weeding and cultivating tool. 3,623,556, Cl. 172-371.

Adams-Russell Co., Inc.: *See—*
Norton, David E., 3,624,536.

Addressograph-Multigraph Corporation: *See—*
Gruss, George A., 3,623,426.

Adkinson, Allen R.; Carter, Richard G.; and Harland, Glen E., Jr., to General Motors Corporation. Mesa-type semiconductor device. 3,624,454, Cl. 317-101.

Adler, Seymour; and Taylor, Jason H., to United States of America, Navy. Oceanographic release hook. 3,623,759, Cl. 294-83.

Adlhart, Otto J.; and Terry, Peter L., to Engelhard Minerals & Chemicals Corporation. Fuel cell system. 3,623,913, Cl. 136-86.

Adlhoch, Richard H.; and Giacomino, Gerald L., to Motorola, Inc. Digital demodulator. 3,624,528, Cl. 329-104.

Admiral Corporation: *See—*
Mantor, Earl L., 3,624,314.

Advance Data Systems Corporation: *See—*
Van Emden, Bernard M., 3,624,311.

Advance Honing Products, Inc.: *See—*
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Advance Products, Inc.: *See—*
Burgess, Billy; Burgess, John H.; Gess, Larry C.; Snyder, Robert P.; and Mc Gilvery, Washington I., 3,623,451.

Advanced Management Engineering & Research Co.: *See—*
Abromavage, John C.; and George, James F., 3,623,283.

Aerojet-General Corporation: *See—*
Lubowitz, Hyman R.; Kuchar, Charles; Greenberg, Harold L.; and Price, Raymond M., 3,624,042.

African Explosives and Chemical Industries, Limited: *See—*
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Neudecker, Karl; Zanner, Johann; Schwitz, Alois; Blank, Rudolf; and Gabriele, Ehgartner, 3,623,679.

Aihara, Kenzo; and Hirokawa, Hideo, to Ikegai Tekko Kabushiki Kaisha. Automatic tool position compensating system for a numerically controlled machine tool. 3,623,216, Cl. 29-568.

Aiken Industries, Inc.: *See—*
Gehres, David W.; and Negley, Paul L., 3,623,847.

Ainlay, John A. Skimmer for separating flowing liquids from water. 3,623,609, Cl. 210-242.

Aircraft Mechanics, Inc.: *See—*
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Ajinomoto Co., Inc.: *See—*
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Akai, Shinichi; and Shimoda, Takashi, to Sumitomo Electric Industries, Ltd. Gallium compounds with reduced silicon contamination and a method of manufacturing them. 3,623,905, Cl. 117-201.

Akers, George J.; and Mc Cord, Wilfred M., Jr., to Vermont American Corporation. Double grip pruner. 3,623,222, Cl. 30-190.

Akeyoshi, Kazuyuki; and Hayashi, Naonori, to Asahi Glass Co., Ltd. Electrically heatable glass product and a method for the production thereof. 3,623,906, Cl. 117-211.

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Albarda, Scato, to U.S. Philips Corporation. Motor speed and torque control circuit with E.M.F. feedback. 3,624,837, Cl. 318-331.

Albee, Percy Frederick, Jr., to Q-Panel Corporation. Collapsible easel. 3,623,691, Cl. 248-454.

Albright, Roy H., to I-T-E Imperial Corporation. Isolating switch for a high power electrical distributions system. 3,624,322, Cl. 200-48.

Aldridge, Frederick Thomas, to Ampex Corporation. Process of making acicular, stable magnetic iron particles. 3,623,859, Cl. 75-0.5

Algrain, Paul. Sliding door or window. 3,623,269, Cl. 49-410.

Allard, Robert S., to Plastic Coating Corporation, The. Method for imaging diazosulfonate photoreproduction materials. 3,623,869, Cl. 96-49.

Allen, David M. Trailer hitch, no sway trailer hitch. 3,623,750, Cl. 280-446.

Allen, Edward L., to Ingersoll-Rand Company. Turn-of-the nut wrench shut-off system. 3,623,557, Cl. 173-12.

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Allman, William T., Jr.; Winger, James H.; and Burn, William A., Jr., to Celanese Corporation. Fluid entangled non-woven fabric. 3,623,935, Cl. 161-57.

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Reitsema, Robert H.; and Allphin, Nylen L., Jr.,3,624,133.

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Alters, Max F.: *See—*
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Aluminum Company of America: *See—*
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Anthon, Erik W., 3,623,844.
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Amoco Production Company: *See—*
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Aldridge, Frederick Thomas, 3,623,859.
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Amster, Robert L., to GTE Laboratories Incorporated. Strontium thiogallate phosphors coactivated by cerium and neodymium. 3,623,996, Cl. 252-301.4

Anderberg, Claes Johan. Processing system for photographic material. 3,623,416, Cl. 95-93.

Anders, Joseph H.; and Bosch, Daniel J., to Modine Manufacturing Company. Radiator system for internal combustion engine. 3,623,462, Cl. 123-41.54

Andersen, H. W., Products, Inc.: *See—*
Anderson, Harold W.; and Harrison, Charles H., 3,623,473.

Anderson, Donald R.; and Frisque, Alvin J., to Nalco Chemical Company. Process for rapidly dissolving water-soluble polymers. 3,624,019, Cl. 260-29.6

Anderson, Earl D., Jr.: *See—*
Cox, John E.; and Anderson, Earl D., Jr.,3,624,294.

Anderson, Earl R., to Brex Corporation, mesne. Fruit feed system and method. 3,623,592, Cl. 198-30.

Anderson, George E., to RCA Corporation. Television amplifier circuits. 3,624,280, Cl. 178-5.4

Anderson, Harold W.; and Harrison, Charles H., to Andersen, H. W., Products, Inc. Method for determining the adequacy of blood circulation in a living body. 3,623,473, Cl. 128-2.

Anderson, Reuben F. Board game apparatus. 3,624,808, Cl. 273-131.

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Anfossi, Henri, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Guiding means for conveying rod-shaped objects and especially cigarettes. 3,623,598, Cl. 198-165.

Angus, James W., to Kollsman Instrument Corporation. Vertical flight path error altimeter. 3,624,366, Cl. 235-150.22

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Hunt, Walter G., 3,624,070.

Ansund, Bo Kent, to Trascandica A.G. Securing means in vehicle transporting platforms. 3,623,688, Cl. 248-119.

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(Notice of Dec. 16, 1969, 869 O.G. 687)

10 : T892,023
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24 : T892,019
26 : T892,026

34 : T892,018
36 : T892,020

36 : T892,022
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48 : T892,025

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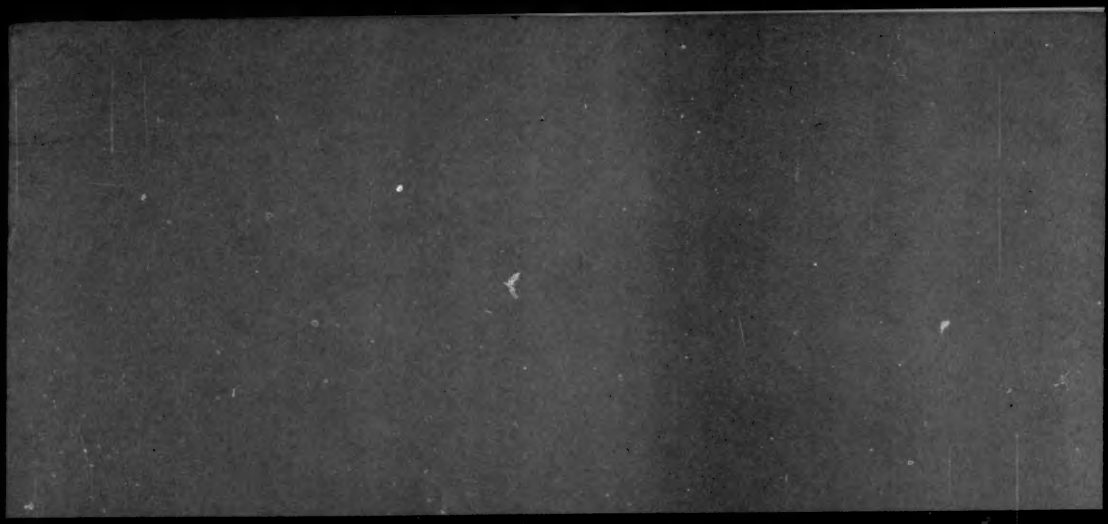

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